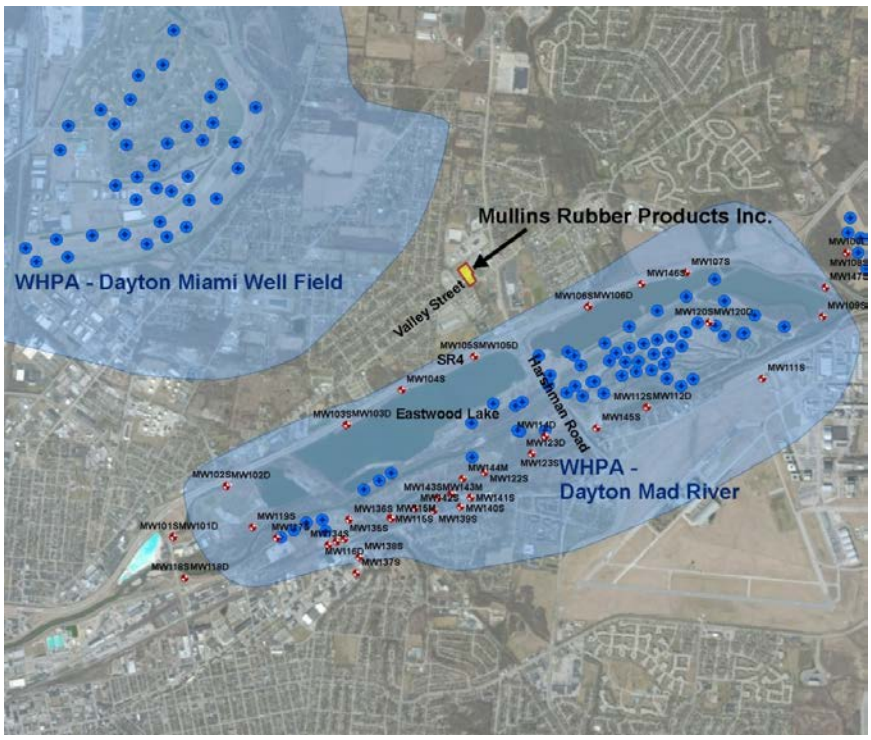
Mullins Rubber Products, Inc.
Supplemental Expanded Inspection Report



Division of Environmental Response and Revitalization (DERR)
Federal Site Assessment
July 2013

SUPPLEMENTAL EXPANDED SITE INSPECTION (SESI) REPORT

For

Mullins Rubber Products, Inc.
Dayton, Montgomery County, Ohio
U.S. EPA ID: OHN000510489

OHIO ENVIRONMENTAL PROTECTION AGENCY
Division of Environmental Response and Revitalization
Southwest District Office
401 East Fifth St.
Dayton, Ohio 45402

July 2013

MULLINS RUBBER PRODUCTS, INC.
SUPPLEMENTAL EXPANDED SITE INSPECTION (SESI) APPROVAL FORM

Prepared by: Randy Watterworth _____
Date
Senior Site Coordinator/SWDO

Prepared by: Wendy Vorwerk _____
Date
Site Investigation Field Unit

Approved by: Brian Nickel

Supervisor, DERR/SWDO

_____ _____
Date

Approved by: Christine Osborne

Supervisor, Site Investigation Field Unit

_____ _____
Date

Approved by: Patrick Hamblin

NPL Coordinator U.S. EPA Region 5

_____ _____
Date

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Comment [RW1]: New section for TCR assessment

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Comment [RW2]: Figure added for TCR assessment.

1.0 EXECUTIVE SUMMARY

The Ohio Environmental Protection Agency (Ohio EPA) Division of Environmental Response and Revitalization (DERR) entered into a cooperative agreement with the United States Environmental Protection Agency (U.S. EPA) Region V to conduct a Supplemental Expanded Site Inspection (SESI) of the Mullins Rubber Products, Inc. (MRP) site, located in Riverside, Montgomery County, Ohio. The purpose of this report is to present SESI analytical data documenting releases of volatile organic compounds (VOCs) to shallow groundwater at the MRP site.

The initial work plan for the SESI was approved by U.S. EPA on November 1, 2012. The initial work plan focused on investigating deep aquifer VOC contamination documented in prior assessments. After reviewing ESI data further, Ohio EPA decided to revise the work plan to focus on shallow groundwater contamination. U.S. EPA approved the revised scope of work on December 18, 2012. The primary objective of the SESI was to determine whether tetrachloroethene (PCE), trichloroethene (TCE) or other VOCs detected in deep and shallow groundwater samples are emanating from the MRP facility or from another off-property source(s). The SESI used the DERR Level-of-Effort (LOE) contractor, Tetra Tech, to provide a track mounted direct-push rig capable of pushing to the top of the deep clay-rich till, approximately 50 feet below ground surface (bgs). The selected direct push rig was also capable of installing pre-packed monitoring wells and conducting vertical aquifer sampling (VAS).

Samples from eighteen VAS borings were analyzed by the Ohio EPA mobile laboratory which provided screening level data. Samples from two depths in the shallow sand and gravel aquifer were collected at most locations. Eight samples from locations along the west side of the MRP property were sent by the LOE contractor to the ALS DataChem Laboratory in Cincinnati with 24-hour turn-around-time for comparison to mobile laboratory screening data. Only 50 percent of the VAS samples were sent VOC analysis to the U.S. EPA Contract Laboratory Program (CLP). At least one sample from all monitoring wells was analyzed by the CLP lab.

Sample results document significant concentrations of PCE and lower, but still above maximum contaminant level (MCL), concentrations of TCE mostly in locations along the west and southwest portions of the MRP property. Samples from locations along the north and east sides of the MRP property had either no or low levels of VOCs. Groundwater contours show that groundwater flow trends to the south to southwest. The highest concentration of PCE was in samples collected from SB-14, on Paul's Garage and Towing Inc. property, about 40 feet west of the MRP property line. The concentration of PCE in the shallow sample at GW-14 (SB-14) was 12,000 µg/L in the CLP sample, but 14,000 µg/L in the sample sent to ALS DataChem for rapid analysis. PCE was also unexpectedly detected at MW-4 (SB-8) on Hypathia Avenue at a concentration of 1,450 µg/L in

the sample sent to Microbac for rapid analysis. The concentration of PCE in the sample from MW-4 sent to the CLP laboratory was 1,500 µg/L. This indicates the VOC plume has moved into a residential neighborhood. Due to the potential for vapor intrusion to occupied structures, on May 9, 2013, Ohio EPA requested assistance from the U.S. EPA Removal Program to conduct a removal action assessment to evaluate the vapor intrusion pathway. U.S. EPA's Removal Assessment efforts are on-going and discussed in detail in section 2.2.

Comment [PGH3]: Recommend noting the status of the removal assessment here or in Section 2.2.

2.0 SITE BACKGROUND

2.1 Site Description

Mullins Rubber Products, Inc. (MRP) is an active manufacturing facility located at 2949 Valley Pike in Riverside, Montgomery County, Ohio. See **Figure 1, Site Location Map** located in **Appendix A**. MRP is located in a mixed industrial and residential area of Riverside. MRP is bordered to the west by Paul's Garage and Towing Inc., and to the east by a single residence and Harshman Self Storage. Old Dominion Freight Lines, Inc., is immediately north of the MRP facility. On the south side of Valley Pike, slightly west of MRP, is a mobile home park. A single family residential plat begins along Hypathia Avenue, approximately 500 feet west of MRP. **Figure 2, Immediate Area Map**, shows land uses in the immediate area surrounding MRP.

The MRP facility sits on a single parcel (Parcel I39002030048) and is comprised of 3.675 acres. Most of the parcel is covered with buildings and asphalt or concrete. There is a small grassy area in the front parking area and a vegetative swale across the northern fence line.

The primary product manufactured at MRP is molded heavy-duty truck/trailer suspension bushings. Currently, there is one main building and several storage sheds at MRP. There are four production wells on the MRP property. The active deep production well formerly produced about 300 gallons per minute for 8 hours a day. This non-contact cooling water previously discharged into a series of dry wells. MRP recently installed a closed loop chiller system which eliminates the need to discharge non-contact cooling water to dry wells. Currently the production well is only used infrequently to "top off" the closed loop system. There are two deep production wells on stand-by. A fourth shallow (50 foot) well is damaged and is no longer used but remains in place. This well was sampled and surveyed in the same manner as were the monitoring wells and is referred to as Old PW in this report. All production wells are located on the east side of the MRP property.

Until the chiller system was operational, there were a series of five dry wells on the northern portion of the property which were used to return the non-contact cooling water to the shallow sand and gravel formation. The five dry wells were interconnected and terminated at the man-made depression located at the

northeast corner of the MRP property. The dry wells were considered Class V injection wells under the Ohio Underground Injection Control (UIC) Program. Permits were not issued, but the wells were registered with Ohio EPA. The dry wells received cooling water from the degreasing tanks along with storm water runoff. The 2010 Site Inspection (SI) sampling found that the water from the deep, active production well was contaminated with VOCs. Under UIC rules, MRP was required to find an alternative to disposal through the dry wells. Due to installation of the chiller system, the dry wells no longer receive water from cooling the degreasing tanks. Several dry wells have been removed. Storm water runoff still enters the shallow aquifer through the depression (sink) in the northeast corner of the MRP property. Runoff during significant rainfall or snow melt causes mounding in the shallow aquifer.

MRP is located approximately 1,300 feet north of the Dayton Mad River Well Field wellhead protection area (WHPA) area five-year time of travel delineation and 1,500 feet southeast of the Dayton Miami Well Field WHPA area five-year time of travel delineation. The closest production well is PW-06, approximately 2,650 feet south of the facility in the Mad River Well Field.

2.2 Site History

MRP began operations in 1942 as the Mullins Tire and Rubber Company. The primary operation at that time was retreading used tires. Other names the company used during its history include The Yellow Front Tire Shop and Bill Mullins Co. Inc.

In 1955, the business expanded from tires into molding different types of rubber products. Beginning in the mid-1960s, the company focused on molding heavy-duty truck trailer suspension bushings, the product line that continues today.

MRP is required to report halogenated solvent usage annually to the Regional Air Pollution Control Agency (RAPCA). After an anonymous source alleged the company was under-reporting the amount of solvents used, the Ohio EPA and RAPCA performed an unannounced inspection on May 14, 2001.

RAPCA and Ohio EPA determined that MRP had under-reported their TCE usage, kept false records and knowingly reported false data from 1995 to 2000. From 1995 to 1999, the combined emissions permit limit was 10,000 pounds per year. Actual emissions were calculated and ranged from 17,679 pounds in 1996 to 38,556 pounds in 1997.

In January of 2004, a seven-count criminal indictment was filed against MRP by the U.S. Attorney's Office in Dayton, Ohio. Later the same year, William R. Mullins, President of MRP, pled guilty to making false statements when reporting airborne discharges of TCE and failing to submit a Title V air permit by the October 1996 deadline. Mr. Mullins was fined, sentenced to home confinement followed by probation, and ordered to perform 100 hours of community service.

MRP now holds a Clean Air Act Title V operating permit that was issued January 16, 2008. TCE usage limit is a facility-wide rolling 12 month limit of 15.54 tons.

A Site Inspection of Mullins Rubber Products was conducted in November 2010. Six groundwater grab samples were collected using the geoprobe direct-push technology. The active deep production well was sampled, along with dry well number DW-2, which received cooling water from the degreasing tanks.

Sample results indicated significant levels of PCE and lower levels of TCE in three of the samples. PCE was detected at 156 µg/L and TCE was detected at 6.18 µg/L in the active production well sample. At that time, water from this production well entered the non-contact cooling system and was discharged to either dry well DW-2 or DW-3. The sample collected from DW-2 also contained PCE and TCE but at lower concentrations than in the production well sample. PCE was detected at 77 µg/L and TCE was detected at 2.2 µg/L in the sample collected out of DW-2 using a dipper attached to a pole. PCE and TCE were also detected in a shallow geoprobe groundwater grab sample collected in the southwest corner of the site. PCE was detected at 58 µg/L and TCE at 11µg/L at this presumed down-gradient location.

An Expanded Site Inspection (ESI) was conducted in December 2011. Three geoprobe pre-packed monitoring wells were installed. The well in the northwest corner (MW-1) did not reach the main shallow aquifer, making it unsuitable for water level measurements. ESI samples documented PCE and TCE in both shallow and deep aquifers but contamination was highest in MW-3 located at the southwest corner of MRP property. PCE was detected at a concentration of 300 µg/L in MW-3. Higher concentrations of PCE in the shallow aquifer pointed to a shallow rather than a deep source of PCE.

2.3 Geology and Hydrogeology

Regional Geology & Hydrogeology

Regionally, unconsolidated glacial deposits overlie consolidated bedrock. Most of the bedrock in the Dayton area consists of Ordovician shale with thin inter-bedded limestone (Richmond Group). In upland areas, the Richmond Group is overlain by the Brassfield Limestone which is Silurian in age. A contact between the two formations is observed at the southeast end of Huffman Dam, approximately two miles east of MRP.

The unconsolidated deposits are glacial sediments consisting of fine-grained clay-rich tills and sand and gravel outwash deposits. The clay-rich tills are relatively impermeable and yield little water. In the Mad River valley, downstream of Huffman Dam, the outwash deposits are generally separated into upper and lower zones by a till layer which can be locally continuous but is discontinuous regionally. Ohio EPA review of Dayton early warning monitoring well logs indicates that the till layer is not present at some locations within the valley near

MRP. The thick clay-rich layer encountered between 50 and 110 feet below ground surface is not present in Dayton Early Warning monitoring wells MW-101D and MW-102D located at the west end of Eastwood Lake. This thick clay-rich layer is also not found in Dayton production wells PW-42, 43, 44, 45, 46, 60 and 62 which are located south and southwest of MRP. Areas where clay-rich till sequences are absent are referred to as "windows in the till". These "windows" in the clay-rich till layers provide localized interconnection between the upper and lower sand and gravel outwash deposits. Logs for the Dayton Early Warning monitoring wells along SR 4 can be found in the 2012 ESI Report, Appendix G. SESI borings in the shallow zone to approximately 50 foot bgs also experienced significant differences in lithology between one boring and another over short distances.

Comment [RW4]: New language added.

Comment [PGH5]: Which well logs? Note reference.

MRP is located over the Mad River buried valley aquifer system one of the most productive aquifers in North America. It is part of the U.S. EPA designated Great Miami Buried Valley Sole Source Aquifer System. The groundwater resources map for Montgomery County indicates that regionally extensive, thick permeable deposits of sand and gravel occur in this area. The aquifer is comprised of sand and gravel outwash deposits ranging in thickness from 120 to 250 feet. In some locations, inter-bedded clay, silt, and clay-rich till aquitards at varying depths separate the aquifer into an upper and lower zone. One such clay-rich till aquitard is present in some areas beneath MRP.

Topographic data and regional hydrogeological information from the Mad River Well Field Assessment (Geraghty and Miller, 1987) indicates that groundwater flow in the vicinity of MRP is south to southwest.

Site-Specific Geology& Hydrogeology

Unconsolidated glacial outwash deposits vary significantly over short distances at the MRP site. All three federal site assessments experienced difficulty in the use of direct-push drilling and sampling technology. Borings along the western MRP property line encountered shallow, hard clay-rich till above the sand and gravel shallow aquifer. At the northwest corner of the property where MW-1 and MW-1R are located, the hard clay-rich till extends from about fifteen feet bgs to thirty feet bgs when it softens. The clay-rich till terminates at thirty-two feet bgs where the shallow sand and gravel aquifer is encountered. Other borings along the west property line also encountered the clay-rich till but the till thins between MW-1R and MW-3 at the southwest corner of the MRP property.

Along the eastern side of the MRP property the shallow till is missing. Instead, this area is underlain by course sand and gravel deposits with large cobbles. This is the reason that the depression at the northeast corner of the MRP property is so effective in allowing runoff to sink into the shallow aquifer. At SB-8/MW-4 on Hypathia Avenue, a thin clay layer was encountered between thirteen and sixteen feet bgs. The rest of the deposits were sand and gravel.

Measurements from ten wells identified in Table 1 were used to determine groundwater flow. Groundwater elevation contours were calculated using Surfer™ software and are shown on **Figure 3, Groundwater Contour Map**. SESI wells MW-5 and MW-6 were determined to be too shallow and do not seem to be screened in the shallow sand and gravel aquifer or are otherwise compromised. The water level readings from MW-1 and the shallow well found at Paul's Garage and Towing, Inc. weren't used for similar reasons.

Table 1
SESI Well Survey and Water Level Data

Point ID	Northing	Easting	Depth to Water	TOC Elevation	Ground Water Elevation
MW-1R	658984.308	1509682.987	24.5	782.357	757.857
MW-2\PZ-2	659132.431	1509928.282	21.57	783.516	761.946
MW-3\PZ-4	658545	1510006	21.29	780.789	759.5
MW-4	658512	1509011.082	25.72	781.763	756.043
MW-104S	655698.592	1508156.847	18.96	771.794	752.834
MW-105S	657976.843	1510159.742	17.71	772.264	754.554
MW-106S	657976.843	1513258.337	16.57	775.831	759.261
Old PW	658904.344	1510046.976	26.41	784.299	757.889
Riverside MW East	657255.286	1510789.686	17	773.773	756.773
Rverside MW-West	657244.707	1510767.527	16.97	773.778	756.808

Coordinate System Ohio State Plane South 1983 (feet): NAVD 88

Comment [PGH6]: When were these wells most recently sampled?

Comment [PGH7]:

Comment [PGH8]:

Dayton monitoring wells were last sampled by Dayton in 2011. See chart below. These Dayton wells were not sampled in the 2011 ESI or in the 2013 SESI following input from U.S. EPA that monitoring well data could not be used to score the site in the Hazard Ranking System (HRS).

Mad Mon. 101D (8/15/2011) No Detect
Mad Mon. 101S (8/15/2011) TCE- 1.07 ppb; PCE - 0.65 ppb
Mad Mon. 102D (8/17/2011) No Detect
Mad Mon. 102S (8/17-2011) No Detect
Mad Mon. 103D (9/14/2011) No Detect
Mad Mon. 103S (9/14/2011) No Detect
Mad Mon. 104S (9/14/2011) No Detect
Mad Mon. 105D (3/24/2011) No Detect
Mad Mon. 105S (3/24/2011) No Detect
Mad Mon. 106D (9/8/2011) 1,1,1-trichloroethane – 0.49 ppb
Mad Mon. 106S (9/8/2011) trichloroethene – 0.25 ppb

Measurements from MW-1R, MW-2, Old PW, and MW-3, located on the MRP property, were combined with the measurements from MW-4 on Hypathia Avenue, the Dayton Early Warning monitoring wells, MW-104S, MW-105S, MW-106 along State Route 4 and two wells located at the Riverside Service Center,

located at State Route 4 and Harshman Road. Based on the groundwater contours, the groundwater flow trend is to the southwest. However, the unexpected VOC detections in MW-4, west of MRP on Hypathia Avenue, indicate there may be a more westerly component to the flow or that sub-surface conditions result in a localized westerly flow component. As noted above, MW-1, MW-5 and MW-6 and the Paul's Garage and Towing monitoring well were not used for flow determination because they are not screened in, or are only partially screened in, the shallow sand and gravel aquifer.

3.0 SAMPLING LOCATIONS & DISCUSSION OF RESULTS

3.1 General Discussion

Between March 18 and March 29, 2013, Tetra Tech installed eighteen soil borings and four monitoring wells for Ohio EPA at the MRP site. Fourteen soil borings were placed on MRP property. One of these was converted into monitoring well MW-1R. Four borings were installed in the surrounding area. Three of these were converted into MW-4, MW-5 and MW-6. The SESI boring and monitoring well locations are shown on the **Figure 4, Boring and Monitoring Well Location Map**. Drilling and well installation techniques followed the procedures and specifications described in the Revised Ohio EPA Supplemental Expanded Site Inspection (SESI) work plan which was provided with revised LOE Mobilization TT13-03.

During the placement of the soil borings, groundwater samples were collected from an upper and lower zone within the shallow sand and gravel aquifer at most locations. A few locations were only sampled from one zone due to geologic reasons or drilling issues. Samples were analyzed on-site by the Ohio EPA mobile laboratory gas chromatograph (GC). Eight early groundwater samples were analyzed by DataChem Laboratories in Cincinnati for quality assurance/quality control (QA/QC). DataChem Laboratory results were compared to mobile laboratory GC screening results to verify GC results were similar. Soil boring and monitoring well locations and modifications to the specifications for the borings/monitoring wells and the drilling, well installation, and sampling were determined on-site by the Ohio EPA Site Coordinator or his designee(s) in consultation with the Tetra Tech geologist and the drillers. All monitoring wells (except MW-6) and about 50% of the VAS samples were sent to the U.S. EPA Contract Laboratory Program (CLP) for volatile organic compounds (VOCs). Complete CLP analytical data can be found in **Appendix B.** Contract Required Quantitation Limits are found in **Appendix C**. PCE results are displayed on **Figure 5, PCE Concentration Map**, and TCE results are displayed on **Figure 6, TCE Concentration Map**. If available, CLP results are displayed for each location. Mobile laboratory data is displayed with different symbology for those samples without CLP laboratory data. Monitoring well data is considered higher quality data and is displayed instead of VAS data even if VAS results are greater than monitoring well results.

SESI sampling results are summarized in Table 2 below, with CLP results highlighted in yellow. Mobile laboratory screening data and DataChem QA/QC comparison samples are included. The results for the sample collected by Ohio EPA from MW-4 and sent to the Ohio EPA contract laboratory, Microbac Laboratories, are also included in Table 2. Unless otherwise stated, all results discussed in the following sections refer to CLP data.

Table 2
2013 SESI Data Summary

Sample ID with depth interval in feet (Grouped by sample location)	TCE Concentration ppb	PCE Concentration ppb	Laboratory/program
MW-1R (29.2-36.2)	0.38J	5	Chemtech/CLP
MW1R (29.2-36.2)	ND	10J	Mobile Lab
GW-1 32-37		6	Chemtech/CLP
GW-1 32-37	ND	ND	ALS Datachem
SB-1 32-37	ND	10	Mobile Lab
GW-1 47-52	ND	ND	ALS Datachem
SB-1 47-52	ND	ND	Mobile Lab
MW-3 (29.5-34.5)	2.3	130	Chemtech/CLP
MW-3D (29.5-34.5)	2.4	120	Chemtech/CLP
MW3 (29.5-34.5)	ND	65	Mobile Lab
GW-2 37-42	5.6	86	Chemtech/CLP
GW-2 37-42	6.3	80	ALS Datachem
SB-2 37-52	3 ~ 4	85	Mobile Lab
SB-2 37-52 Dup	3 ~ 4	67	Mobile Lab
GW-3 32-37	29J	140J	Chemtech/CLP
GW-3 32-37	24	140	ALS Datachem
SB-3 32-37	8 ~ 10	170	Mobile Lab
SB-3 32-37 dup	8 ~ 10	149	Mobile Lab
GW-3 47-52	5.8	69J	Chemtech/CLP
SB-3 47-52	12	70	Mobile Lab
SB-4 32-34	1.5J	23J	Mobile Lab
SB-4 44-46	1.2J	7.8J	Mobile Lab
SB-5 32-35.5	ND	ND	Mobile Lab
SB-5 48.5-52	1.1J	8J	Mobile Lab

Table 2
2013 SESI Data Summary

Sample ID with depth interval in feet (Grouped by sample location)	TCE Concentration ppb	PCE Concentration ppb	Laboratory/program
GW-7 32-37	2.9	110	Chemtech/CLP
GW-7 32-37	ND	86	ALS Datachem
SB7 32-37	ND	66	Mobile Lab
GW-7 47-52	0.87	42J	Chemtech/CLP
GW-7 47-52	ND	27	ALS Datachem
SB-7 47-52	ND	18	Mobile Lab
MW-4 29.4-34.4	23J	1500	Chemtech/CLP
MW-4 29.4-34.4	23.2	1450	Microbac
MW-4 29.4-34.4	6 ~ 10J	1460	Mobile Lab
GW-8 32-37	23J	1100	Chemtech/CLP
SB-8 32-37	7 ~ 10	1712	Mobile Lab
SB-9 32-37	ND	ND	Mobile Lab
SB-9 42-47	ND	ND	Mobile Lab
GW-10 32-37	19	380	Chemtech/CLP
SB10 32-37	6 ~ 10	431	Mobile Lab
GW-10 47-52	54	35	Chemtech/CLP
SB-10 47-52	12	10 ~ 20	Mobile Lab
GW-12 32-36	1	26	Chemtech/CLP
SB-12 32-36	ND	7J	Mobile Lab
SB-12 48-52	2 ~ 3J	25J	Mobile Lab
SB13 25-29	ND	ND	Mobile Lab
GW-13 39-42	ND	ND	Chemtech/CLP
SB-13 39-42	ND	ND	Mobile Lab
GW-14 32-36	12J	12000	Chemtech/CLP
GW-14 32-36	ND	14000	ALS Datachem
SB-14 32-36	5 ~ 10	3400	Mobile Lab
GW-14 47.5-51.5	21J	5000	Chemtech/CLP
GW-14 47.5-51.5	15	5500	ALS Datachem
SB-14 47.5-51.5	7 ~ 10	3700	Mobile Lab

Table 2
2013 SESI Data Summary

Sample ID with depth interval in feet (Grouped by sample location)	TCE Concentration ppb	PCE Concentration ppb	Laboratory/program
GW-15 32-35	0.30J	17	Chemtech/CLP
SB-15 32-35	ND	28J	Mobile Lab
SB-15 48-51	ND	13	Mobile Lab
GW-16 24-28	8.3	210	Chemtech/CLP
SB-16 24-28	4 ~ 6J	266	Mobile Lab
SB-16 41-45	ND	13J	Mobile Lab
GW-17 31.5-35.5	0.36J	4	Chemtech/CLP
SB-17 31.5-35.5	2 ~ 4J	20 ~ 25J	Mobile Lab
SB-17 47.5-51.5	2 ~ 4J	18J	Mobile Lab
SB-18 32-36	ND	ND	Mobile Lab
SB-18 42.5-46.5	ND	ND	Mobile Lab
MW-1 (21.2-26.2)	ND	2.3J	Chemtech/CLP
MW-1repeat		0.24	Chemtech/CLP
MW-2 (21.9-26.9)	ND	14	Chemtech/CLP
MW-5 (29.8-34.8)	ND	ND	Chemtech/CLP
OLD PW (48.7)	1.1	31	Chemtech/CLP
Old PW	ND	20J	Mobile Lab
Pauls MW (11.9-24.4)	ND	0.40J	Chemtech/CLP

During the week of July 8, 2013, Ohio EPA and U.S. EPA conducted a Time-Critical Removal Action Assessment to determine whether the vapor intrusion pathway was complete. Removal action assessment activities are described further in section 3.4.

Comment [RW9]: Added text for TCR assessment.

3.2 Soil/Sediment Sampling

No soil or sediments were collected during the SESI.

3.3 Groundwater Sampling

Samples were collected from eight monitoring wells. These included ESI wells MW-1, MW-2, MW-3 and SESI wells MW-1R, MW-4 and MW-5. In addition, the MRP 50 foot former production well, identified as Old PW, and a shallow monitoring well at Paul's Garage and Towing, Inc., were sampled during the SESI. Groundwater samples were also collected from eighteen vertical aquifer sampling (VAS) borings, four of which were converted into monitoring wells MW-1R, MW-4, MW-5 and MW-6. VAS samples were collected from the base and top of the shallow sand and gravel aquifer at most locations to check for differences in VOC concentrations with depth. **Appendix D, Tetra Tech LOE Report**, contains boring logs and other information compiled by Tetra Tech staff during the SESI.

MW-1 and SB-1/MW-1R (replacement) are located side by side in the northwest corner of the MRP property. PCE was detected in the two samples from MW-1 at concentrations of 2.3J and 0.24 µg/L PCE, respectively. TCE was not detected in MW-1. MW-1 is screened above the shallow aquifer in what is considered a "perched", thin sand seam. MW-1 pumped dry during SESI sampling.

SB-1 was logged from the surface to 56 feet bgs. Boring logs can be found in **Attachment 1, Tetra Tech Final Report**. The shallow sand and gravel aquifer at this location extends from 32 feet to 48 feet bgs. VAS samples were collected from 47 to 52 feet bgs and from 32 to 37 feet bgs. Mobile laboratory screening samples were non-detect for PCE and for TCE. MW-1R is the replacement well installed during the SESI and is screened in the shallow sand and gravel aquifer from 32 to 37 feet bgs. PCE was detected at a concentration of 5 µg/L and TCE was detected at a concentration of 0.38J µg/L in the sample collected from MW-1R. Groundwater measurements indicate MW-1R is on an up-gradient side of MRP property.

MW-2 is in the northeast corner of MRP property and is the closest well to the recharge basin where contaminated non-contact cooling water formerly discharged into the shallow aquifer. Storm water still flows to this basin and some mounding of groundwater was measured during the SESI due to storm water from snow melt and rainfall during field work. PCE was detected in the sample from MW-2 at a concentration of 14 µg/L.

MW-3 is located near Valley Pike in the southwest corner of MRP property. In the SESI sample collected from MW-3, PCE was detected at a concentration of 130 µg/L. This concentration is significantly lower than the 300 µg/L result found during the ESI for MW-3. This large difference in concentration of PCE in MW-3 over a period of about fifteen months may reflect continuing shallow groundwater flow changes due to the elimination of discharges through the former series of five dry wells at the north end of the MRP facility.

SB8/MW-4 is located about 900 feet west of MRP at the intersection of Hypathia Avenue and Bushnell Avenue. SB-8 was logged from the surface to 45 feet bgs. Extensive sand and gravel was documented from near surface to 35 feet bgs with only a three foot clay-rich layer between 13 and 16 feet bgs. A thicker clay layer was encountered at 35 feet bgs and extended to 45 feet bgs. At that point a decision was made to terminate the hole and the VAS sample was collected. PCE was detected in the sample from MW-4 at a concentration of 1,500 µg/L. TCE was detected at a concentration of 23J µg/L.

MW-5 is located north of MRP on the cul-de-sac of Transportation Road. The VAS boring was pushed to 52 feet below ground surface without logging. VAS samples were collected from 48.5 to 52 feet bgs and from 32 to 35.5 feet bgs. Mobile lab data for the VAS samples were non-detect or had trace estimated concentrations of PCE and TCE. Difficulties were encountered while setting the well at this location. MW-5 is several feet shallower than intended. MW-5 does not purge dry but does not seem to be deep enough to be fully within the shallow sand and gravel encountered at MRP. VOCs we not detected in the sample from MW-5.

MW-6 is located on Valley Pike approximately 220 feet east of the intersection with Harshman Road. The boring for SB-11/MW-6 was logged from 24 feet to 37 feet bgs. At 24 to 25 feet feet bgs wet sand was encountered. Very stiff clay extended from 25 to 32 feet bgs where the sallow sand and gravel aquifer was logged. The well was screened from 32 to 37 feet bgs but did not produce water after repeated attempts to clear the screen. No groundwater sample was collected from MW-6 and it was not used for water level measurements.

VAS samples were collected from all locations including those not converted to monitoring wells. All VAS samples were analyzed by the Ohio EPA mobile laboratory gas chromatograph (GC) and about half of the VAS samples received CLP analysis. VAS samples from the west and south sides of MRP including SB-2, SB-3, SB-t, SB-10, SB-14 and SB-16 all contained elevated concentrations of PCE ranging from 86 µg/L in SB-2 to 14,000 µg/L in SB-14. TCE concentrations in these wells range from 0.87 µg/L at SB-7 to 19 µg/L at GW-10. See **Table 2** for complete results. PCE results are displayed on **Figure 5, PCE Concentration Map** and TCE results can be found on **Figure 6, TCE Concentration Map**.

Concentrations of VOCs in boring locations on the north and east sides of MRP were general much lower than concentrations on the west and south sides of MRP. Concentrations of PCE range from non-detect (ND) at boring SB-13 and at SB-5 (mobile lab screening data) to 26 µg/L at SB-12. TCE concentrations range from non-detect in SB-1, SB-3 and SB-5 to 1.5J (mobile laboratory screening data) in SB-4. See **Table 2** for complete results. PCE results are displayed on **Figure 5, PCE Concentration Map** and TCE results are shown on **Figure 6, TCE Concentration Map**.

3.4 July 2013 Time-Critical Removal Action Assessment

Comment [RW10]: New section for TCR assessment

On May 9, 2013, Ohio EPA requested that U.S. EPA conduct a Time-Critical Removal (TCR) Action Assessment to determine if groundwater contaminated with VOCs was resulting in vapor intrusion into occupied structures. At the request of the U.S. EPA On-Scene Coordinator (OSC), Ohio EPA conducted a geoprobe investigation of the area west of MRP as part of the removal action assessment under the name, Valley Pike VOC Site. Ohio EPA mobilized its geoprobe and its mobile laboratory during the week of July 8, 2013, to collect the additional samples requested by the OSC.

The geoprobe was used to collect soil cores, soil gas and groundwater samples from ten locations shown on Figure 7, July 2013 Time-Critical Removal Action Assessment Sample Locations. The Ohio EPA mobile laboratory gas chromatograph (GC) was used to provide screening level data for samples collected. Based on mobile laboratory screening data, the U.S. EPA START contractors collected soil gas and groundwater samples for fixed laboratory analysis. The U.S. EPA contractor also collected sub-slab samples from several residences in the area of concern. Sub-slab results were not available for inclusion in this revised SESI Report.

Screening results and confirmation fixed laboratory results are summarized in the tables provided below. Complete TCR Action Assessment data can be found in Appendix E.

Removal Action Assessment Groundwater Summary Table

Location	Groundwater(GW) Sample Depth (feet)	Mobile Lab GW PCE (µg/L)	Mobile Lab GW TCE (µg/L)	ALS Datachem GW PCE (µg/L)	ALS Datachem GW TCE (µg/L)
SG-1	25.49' (collected from MW-4)	1,069	19.2		
SG-2	25.68'	3,854	27.4	800	24
SG-3	25.46'	284 399	25.2		
SG-4	No level was recorded	30.6 32.6	6.1		
SG-5	Perched water table				
SG-6	25.2'	66 68.6	11.1 10.4		
SG-7	23.1'	384.1 377.9	36.8 36.6	240	45
SG-8	23.62'	527.1	48.7	350	47
SG-9	22.35'	114,775	10.7	20,000	ND
SG-10	Not Collected				

Orange highlight indicates location where a groundwater sample was sent to ALS Datachem for confirmation analysis

Removal Action Assessment Soil-gas Summary Table

Shallow Soil-gas (SG) Probe Depth (feet)	Field PID SG result (ppb)	Mobile Lab SG PCE (ppbv)	STAT Analysis Corp SG PCE (ppbv)	Deep SG Probe Depth (feet)	Field PID result (ppb)	Mobile Lab PCE (ppbv)	STAT Analysis Corp SG PCE (ppbv)	STAT Analysis Corp SG TCE (ppbv)
11'	1,500	622		22.5'	41,000	34,700	30,000	480
11'	1,160	560		22.5'	2,500	5,679	900	73
9.8'	1,200	717 853		22.5'	15,000	8,279 13,000	9,300	860
11'	3,100			22.5	4,760		1,300	600
11'	4,000	376 350	40					
11'	3,000	1,435		20'	5,000	5,082	3,800	440
11'	3,000	2,748		20'	6,500	4,760	2,000	330
11'	2,740	956		19'	4,200	3,775	1,500	130
				20'	24,000	16,300	25	11

Yellow highlights indicate soil probe depths sampled by EPA START for lab analysis.

Removal Action Assessment Sub-slab Summary Table

Location	Type of Sample	Mobile Lab PCE (ppbv)	Mobile Lab TCE (ppbv)	STAT Analysis Corp TO-15 PCE (ppbv)	STAT Analysis Corp TO-15 PCE (ppbv)	PCE SS Screening Level (10^{-4}) (ppbv)	TCE SS Screening Level (10^{-4}) (ppbv)
2939 Valley	Sub-Slab	129 75	82 94	Not Available	Not Available	600	40
2637 Rondowa	Sub-Slab	1,803 1,877	483 510	Not Available	Not Available	600	40
120 Hypathia	Sub-Slab	2102 2,027	145 J 74 J	Not Available	Not Available	600	40
2645 Rondowa	Sub-Slab	2,332	398	Not Available	Not Available	600	40
2634 Bushnell	Sub-Slab	10,500	764	Not Available	Not Available	600	40

4.0 MIGRATION PATHWAYS

4.1 Soil Exposure Pathway

The soil exposure pathway was not evaluated in the SESI. Data indicate that a surficial source is likely located east or northeast of SB-14. If the surficial source is uncovered during construction or excavations or due to other disturbances, the source may become a threat through direct contact.

4.2 Groundwater Pathway

The groundwater pathway and the vapor intrusion pathways are the main pathways of concern. The site is located approximately 1,350 feet from the Dayton Mad River Well Field wellhead protection area and 1,600 feet from the Dayton Miami Well Field wellhead protection area. The closest production well is approximately 2,650 feet from MRP in the Dayton Mad River Well Field.

Figure 3, Groundwater Contour Map shows that groundwater flow is generally

to the southwest which confirms the regional groundwater flow of the Mad River Buried Valley Aquifer depicted in the 2011 Expanded Site Inspection (ESI) Figure 6. The groundwater contours indicate the flow of groundwater is generally to the southwest relative to MRP.

There are four community drinking water systems within the four-mile radius target distance limit (TDL) but the closest, and most likely to be impacted by releases of VOCs from the MRP site, is the Dayton Mad River Well Field, located 0.36 miles south and southwest of MRP. A series of production wells extends along the Mad River, down-gradient of the MRP site. Dayton's two well fields have a total of 162 production wells. These wells serve a population of 420,000. According to Dayton, each well serves approximately the same percentage of the population. Therefore, each well serves approximately 2600 individuals. Samples were collected from nine Dayton Mad River Well Field production wells generally down-gradient of MRP during the 2011 ESI. PCE was detected in five of the wells at concentrations below its maximum contaminant level (MCL) and TCE was detected in four of the wells at similar concentrations as noted in the following 2011 ESI Report Public Well Summary Analytical table.

ESI Public Well Summary Analytical Table

Sampling Location :	PW-3		PW-7		PW-8		PW-9		PW-42	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Chloroform										
1,1-Dichloroethane										
1,1,1-Trichloroethane										
Trichloroethene							2.8			
Tetrachloroethene					1.5					

Sampling Location :	PW-43		PW-44		PW-45		PW-46	
Units :	ug/L		ug/L		ug/L		ug/L	
Dilution Factor :	1.0		1.0		1.0		1.0	
Compound	Result	Flag	Result	Flag	Result	Flag	Result	Flag
Chloroform							0.36	J
1,1-Dichloroethane	0.42	J						
1,1,1-Trichloroethane	0.73				0.49	J	1.4	
Trichloroethene	0.55				0.25	J	0.87	
Tetrachloroethene	0.65		0.27	J	0.54		0.65	

PCE, at a concentration of 12,000 µg/L, was detected in the shallow sample collected at GW-14/SB-14 and at a concentration of 1500 µg/L at the MW-4/SB-8 location. These concentrations can be a potential threat through vapor intrusion from groundwater to indoor air depending on groundwater depth and soil type. Ohio EPA requested assistance from the U.S. EPA Removal Program to evaluate the vapor intrusion pathway.

Comment [RW11]: I talked with geologic support staff and none believe Eastwood Lake or the Mad River act as barriers to flow. Ohio EPA staff believe that shallow groundwater contamination may be intercepted by the lake but may remain a discrete layer within the lake and may still be pulled towards production wells. The lake and the river both recharge to aquifer as pumping in the well field takes place. Deep contamination may be drawn towards production wells without any interaction with the shallow lake. No one believes the lake or river are barriers to GW flow.

This interpretation stems from a large body of evidence within the buried valley system from similar settings at sites like Troy and Urbana well fields. Both the East and West Troy well fields drawn groundwater from the opposite side of the Great Miami River. In Urbana, VOC groundwater feeds into a lake similar to Eastwood Lake and subsequently travels through the lake and is pulled into production wells at the far side of the lake.

Proving that the Eastwood Lake is not a discontinuity (barrier) to flow from the Mullins area to Dayton production wells could be accomplished with a pumping test similar to the one used for the West Troy site. However, I have been advised that even if a pumping test shows interconnectivity between production wells and monitoring wells in the Mullins area, the pump test would not pro ...

Comment [PGH12]: If the site proceeds toward NPL proposal, we'll need additional supporting information to demonstrate that Eastwood Lake does not create an aquifer discontinuity.

Comment [D13]: 420000/162 = 2592

Comment [RW14]: The use of the approximation is appropriate. The exact number served by each well (420,000/162 = 2592) is not crucial for the report. The population of Dayton is not fixed permanently at 420,000 and can fluctuate up or down daily. Although Dayton uses the same pumping rate for each well as a rule of thumb, it is unlikely that each well pumps exactly the same amount of water each year. Wells come in and out of producti ...

Comment [RW15]: David asked is these the same wells where PCE was detected. I added a ESI report table to satisfy this comment.

TCR Action Assessment sampling confirms that the VOC plume extends to at least Pleasant Valley Pike which is approximately 1500 feet west of MRP. During the TCR Action Assessment, PCE was detected at a concentration of 350 µg/L at location SG-8 and 240 µg/L at location SG-7. TCE was detected at these locations at 45 to 47 µg/L which is higher than concentrations of TCE found on Hypathia Avenue. During the TCR Action Assessment, a groundwater sample was collected from the same location as SESI SG-14. The concentration of PCE at this location was 20,000 µg/L in the TCR Action Assessment sample (SG-9/GW-9). This is a significant increase in VOC concentrations at this location since the March 2013 SESI.

4.3 Surface Water Pathway

The surface water pathway was not evaluated during the SESI. However, Eastwood Lake and the Mad River are potential end points for storm water discharges from MRP.

4.4 Air Pathway

The air pathway was not evaluated during the SESI. Vapor intrusion is not a current pathway under the Hazard Ranking System. However, due to the possibility of vapor migration into occupied structures from the source(s) and from the VOC groundwater plume, Ohio EPA requested a U.S. EPA time-critical removal action (TCR) assessment to evaluate the vapor intrusion pathway.

5.0 SUMMARY

MRP is a rubber products manufacturing facility that has been active since 1942. The company uses TCE in its manufacturing processes. No use of PCE has been reported. In 2004, William R. Mullins, the company president, pled guilty to four counts of making false statements when reporting airborne discharges of TCE. Mr. Mullins also pled guilty to one count of failing to submit a Title V air permit by the October 1996 deadline.

The site is located within 1,350 feet of wells within the Dayton Mad River Well Field. Five Dayton production wells located southwest and down-gradient of MRP had PCE or TCE at concentrations below MCLs during 2011 ESI sampling.

SESI sampling results show significant detections of TCE and PCE in the shallow sand and gravel aquifer. The highest concentration of PCE in shallow groundwater was in GW-14/SB-14. The concentration of PCE was 12,000 ug/L in the CLP laboratory sample and 14,000 ug/L in the ALS DataChem sample. The highest concentration of TCE was 54 ug/L in the deeper interval at GW-10/SB-10. PCE was detected at a concentration of 1500 ug/L at MW-4/SB-8 in the residential area west of MRP. Sampling has not located the source or sources of PCE and TCE in soil. Based on SESI results the source(s) is

somewhere east or northeast of SB-14.

The elevated concentrations of VOCs in groundwater prompted Ohio EPA to request that U.S. EPA complete a Time-Critical Removal Action Assessment to evaluate the potential for vapor intrusion into occupied structures over the contaminated groundwater. The removal action assessment is currently being evaluated by the U.S. EPA Removal Program with assistance from Ohio EPA. Initial removal action assessment results indicate that a significant VOC groundwater plume extends west, to Pleasant Valley Avenue. Groundwater concentrations of PCE at SESI SB-14 increased to 20,00 µg/L in the repeat sample collected in July. Soil-gas results indicate the potential for a complete vapor intrusion pathway. Sub-slab results were not available to be included in this report.

TETRA TECH

250 West Court Street ♦ Suite 200W ♦ Cincinnati, OH 45202 ♦ (513) 241-0149 ♦ FAX (513) 241-0354

May 14, 2013

Mr. Randy Watterworth
Ohio Environmental Protection Agency SWDO
401 East Fifth Street
Dayton, OH 45402

Reference: **Ohio EPA Contract CSP900211 Mobilization Order (MO) #TT13-03 Monitoring Well Installation – Mullins Rubber Products Riverside, Montgomery County, Ohio**

Subject: Final Report

Dear Mr. Watterworth

Under the above-referenced contract and mobilization order (MO) the Ohio Environmental Protection Agency (Ohio EPA) tasked Tetra Tech EM Inc. (Tetra Tech) to conduct soil boring and monitoring well installation activities at the Mullins Rubber Products site in Riverside, Montgomery County, Ohio. The scope of work was specified under MO TT-13-02 in November, 2012. Ohio EPA subsequently modified the project scope and issued a revised MO (TT-13-03) in January 2013. The scope of and procedures for MO TT-13-03 was revised through discussion with Ohio EPA in January and February 2013, and a final Site-Specific Work Plan (SSWP) was submitted to Ohio EPA on February 28, 2013. The SSWP was approved on March 2, 2013.

The SSWP encompassed the activities required to complete the scope of work indicated in the MO. The SSWP included:

- Descriptions of the procedures to complete the required scope of work
- A health and safety plan (HSP) addressing project activities
- Estimates of the timeframes for completing tasks, allocation of work hours, equipment, and personnel
- Itemized estimates of the cost of work

The following sections summarize the work completed.

SITE DESCRIPTION AND PROJECT OBJECTIVES

The Subject Property is the Mullins Rubber Products (Mullins) property, which is an approximately 3.3- acre parcel of land located at 2949 Valley Pike in Riverside, Montgomery County, Ohio, 45404. Soil borings, groundwater sampling, and monitoring well installation activities were conducted to support the Ohio EPA's investigation into the source of groundwater chlorinated volatile organic compounds (VOCs), the on-site

and off-site extent of groundwater contamination, and the installation of permanent monitoring well to determine the direction of groundwater flow in the shallow saturated zone.

The scope of work included the following:

- Complete up to seventeen soil borings in the upper aquifer and conduct vertical aquifer sampling (VAS) from two horizons at each location
- Install and develop shallow groundwater monitoring wells in four of the borings
- Collect subsurface samples at locations for the purpose of identifying lithology
- Coordinate disposal of investigation derived waste (IDW)

SUMMARY OF FIELD ACTIVITIES

Between March 18 and March 29, 2013, Tetra Tech installed a total of eighteen soil borings and four monitoring wells at the site. Fourteen soil borings (with one converted to a monitoring well) were placed on the Mullins site and four (three converted to monitoring wells) were place off-site. The boring and monitoring well locations are shown on the Figures 1 and 2 (attached). Drilling and well installation techniques were performed to the procedures and specifications described in the Revised Ohio EPA Supplemental Expanded Site Inspection (SESI) work plan which was provided with revised MO TT13-03.

During the placement of the soil borings, groundwater samples were collected from an upper and lower water bearing zone and analyzed on site by Ohio EPA personnel using the Ohio EPA mobile laboratory gas chromatograph (GC). Selected groundwater samples were selected and analyzed by an off-site analytical laboratory for quality assurance/quality control (QA/QC). Prior to this investigation, three monitoring wells (MW-1, MW-2, and MW-3) were placed on the Mullins site.

Soil boring and monitoring well locations and modification to the specifications for the borings/monitoring wells and the drilling, well installation, and sampling were determined by on-site Ohio EPA Senior Site Coordinator (SSC) Randy Watterworth.

The following sections provide a summary of the field activities. Monitoring well installation diagrams, boring logs, and copies of the QA/QC laboratory analytical reports conducted for of the Ohio EPA mobile laboratory GC results are included in Attachments 1 and 2.

Soil Borings and Monitoring Well Installation

Prior to commencing drilling activities, Tetra Tech contacted the Ohio Utilities Protection Service (OUPS) and Base Engineering at Wright Patterson Air Force Base (WPAFB) to confirm that boring locations were clear of underground utilities. In addition, on March

12, 2013 each proposed location was cleared using ground-penetrating radar provided by a private utilities location service (Geosearches Inc.). Tetra Tech and its drilling contractor (Jersey West Drilling) mobilized to the site on March 18 and commenced drilling activities. Vicky Farmer was the Tetra Tech on-site project manager and supervised subcontractor field activities.

The scope of work called for soil borings to be advanced to a deep clay layer at an approximate depth of 45 to 50 feet below ground surface (BGS) using direct push technologies (DPT) drilling methods. Soil samples were collected in two borings to determine soil lithology and water bearing zones. In the first soil boring location, SB-1 on the northwest corner of the site, an extremely dense glacial till deposit was encountered at approximately 30 feet to 40 feet bgs. Because of the difficulty for the DPT method to penetrate this dense layer, solid flight auger tools were used to advance through the dense layer. Soil borings on the northwest and northeast portion of the site (SB-2, SB-3, SB-4, SB-5, SB-6, SB-14 and SB-17) were completed by auguring to 30 feet bgs and using the DPT method to the deep clay layer. However, soil borings placed in the southeast portion of the site (SB-2, SB-10, SB-13, SB-15, SB-16, and SB-18) were completed using the DPT method.

Subsurface soil samples were continuously collected in four-foot intervals at two borings - SB1 and SB8; soil samples were not collected in the remaining borings. Soil cuttings from each boring were temporarily stored in 55-gallon drums for later disposal.

Borings were advanced to the top of the deep clay layer at depths ranging between 37 feet bgs (SB-11) to 56 feet bgs (SB-1) as shown in Table 1. Groundwater samples were collected from two water bearing zones in most borings as shown in Table 1. During this investigation, one on-site soil boring (SB-1) was converted to a monitoring well (MW-1R) and three off-site soil borings were converted to monitoring wells; SB-8 (MW-3), SB-9 (MW-5), and SB-11 (MW-6). MW1-R was completed adjacent to MW-1, which is a perched well and does not produce water. Because of down-hole problems (broken and lost drilling rods) encountered during the drilling SB-6 and SB-11 and because MW-2 is near SB-6 and SB-11 was converted to MW-6, no groundwater samples were collected from these borings. Also, no upper water bearing zone was encountered in SB-2; therefore, no deep water sample was collected.

Groundwater samples were collected through a screened inner casing that was exposed between four and five feet in the upper and lower water bearing zones. The borings were advanced to the deep clay layer, based on soil lithology collected from selected borings, and groundwater samples were collected using a bladder pump and dedicated tubing. Upon completion of the boring, the lower groundwater water samples were collected immediately above the deep clay layer then the casing was then retracted approximately 10 feet, and a second groundwater sample was taken in the upper water

bearing zone. A summary of total depths and groundwater sample depths is provided in Table 1, below:

Table 1 – Summary of Soil Boring and Sample Depths

Boring	Total Depth	Lower Sample Depth	Upper Sample Depth
SB-1	56’	47-52’	32-37’
SB-2	48’	37-42’	NS
SB-3	52’	47-52’	32-37’
SB-4	46’	44-46’	32-34’
SB-5	52’	48-52’	32-35.5’
SB-6	52’	NS	NS
SB-7	52’	47-52’	32-37’
SB-8	45’	32-37’	NS
SB-9	52’	42-47’	32-37’
SB-10	52’	47-52’	32-37’
SB-11	37’	NS	NS
SB-12	52’	48-52’	32-36’
SB-13	43’	39-43’	25-29’
SB-14	51.5’	47.5-51.5’	32-36’
SB-15	51’	48-51’	32-35’
SB-16	45’	41-45’	24-28’
SB-17	52’	47.5-51.5’	31.5-35.5’
SB-18	46.5’	41.5-46.5’	32-36’

Groundwater samples were collected using a bladder pump with dedicated disposable tubing by Ohio EPA field staff. Tetra Tech collected split samples at eight locations (SB-1 upper and lower zones, SB-2 upper -zone, SB-3 upper zone, SB-7 upper and lower zones, and SB- 14 upper and lower zones). These samples were delivered to ALS laboratory in Cincinnati for QA/QC samples and analyzed within a 24-hour turn-around time.

Monitoring wells were installed in soil borings SB-1 (MW-1R), SB-8 (MW-4), SB-9 (MW-5), and SB-11 (MW-6). The wells were constructed of Schedule-40, 2-inch inside-diameter, flush-threaded polyvinyl chloride (PVC) riser pipe with a 0.010-inch PVC slotted screen. As requested by Ohio EPA, 5-foot long screens were used at each location. Construction methods were similar at each location. The well screen was attached to the riser pipe and lowered to the bottom of the borehole. A silica sand (Global #5 sand) filter pack was installed around the well screen. The filter pack extended to approximately 2 feet above the screened section. A bentonite seal, constructed from bentonite chips, was placed approximately 2 feet above the top of the sand filter pack. A small amount of clean, potable water was poured into the borehole, and the bentonite chips were allowed to hydrate before grout was added to the borehole. The annular space above the bentonite chip seal was filled to the ground surface with bentonite grout, and a watertight expandable cap was installed. The wells were

completed with a locking inner cap and flush mount casing with bolt-down cover set in a concrete pad.

LABORATORY ANALYSES

Groundwater split samples were delivered to ALS laboratories in Cincinnati, Ohio for rapid 24-hour turnaround. ALS analyzed the samples using Method 8260; results are summarized in Table 2, below:

Table 2, Summary of Laboratory Analytical Data

		Acetone	Tetrachloroethene	Trichloroethene
GW1-32-37	(Upper zone)	17	ND	ND
GW1-47-52	(Lower zone)	8.3	ND	ND
GW2-37-42	(Lower zone)	14	80	6.3
GW3-32-37	(Upper zone)	ND	140	24
GW7-32-37	(Upper zone)	ND	86	ND
GW7-47-52	(Lower zone)	ND	27	ND
GW14-32-36	(Upper zone)	ND	14,000	ND
GW14-47.5-51.5	(Lower zone)	ND	5,500	15

Lab results shown are in ug/L (micrograms per liter)

The full laboratory package is included in Attachment 2.

All soil boring groundwater samples were analyzed using the Ohio EPA mobile laboratory and only preliminary results were reported to Tetra Tech. The four new monitoring wells were developed and sampled by the Ohio EPA and no analytical analyzed was reported to Tetra Tech.

Decontamination and Management of Investigation-Derived Waste (IDW)

Decontamination procedures were consistent with Tetra Tech's approved SSWP and MO TT13-03. Drilling and well development equipment was steam cleaned between locations. Drill cuttings generated during drilling and water generated during well development and decontamination were placed in 55-gallon drums.

SUMMARY OF RESULTS

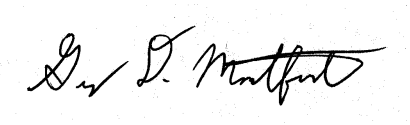
The following results/observations were noted:

- Subsurface materials at the site were similar among the boring locations, with the deep clay layer at approximately 52 feet bgs. Two zones of groundwater were sampled at most borings – the lower at the bottom of the boring, and the upper at approximately 32 feet bgs.

- Groundwater samples collected on the southwest corner of the Mullins site in SB-2, the west side of the Mullins site in SB-1, SB-7, and off site to the west in SB-14 show detectable concentrations of both tetrachloroethene and trichloroethene.
- The greatest detectable concentrations tetrachloroethene in the upper and lower water bearing zones are shown in SB-14 which is immediately west of the solvent tank at the Mullins site.
- Ohio EPA reported to Tetra Tech that detectable concentrations of tetrachloroethene were also found in MW-4 which is west of SB-14 and the Mullins site.

If you have any questions regarding this report, please call Victoria Farmer at (513) 333-3666.

Sincerely,



Guy Montfort
Contract Project Manager

Attachments (2)

Legend

Approximate soil boring location

Source: Bing Maps

FIGURE 1

Mullins Rubber Onsite Boring Locations

TETRA TECH

LEGEND

● Approximate soil boring location

Source: Bing Maps

FIGURE 2

MULLINS RUBBER OFFISTE BORINGS

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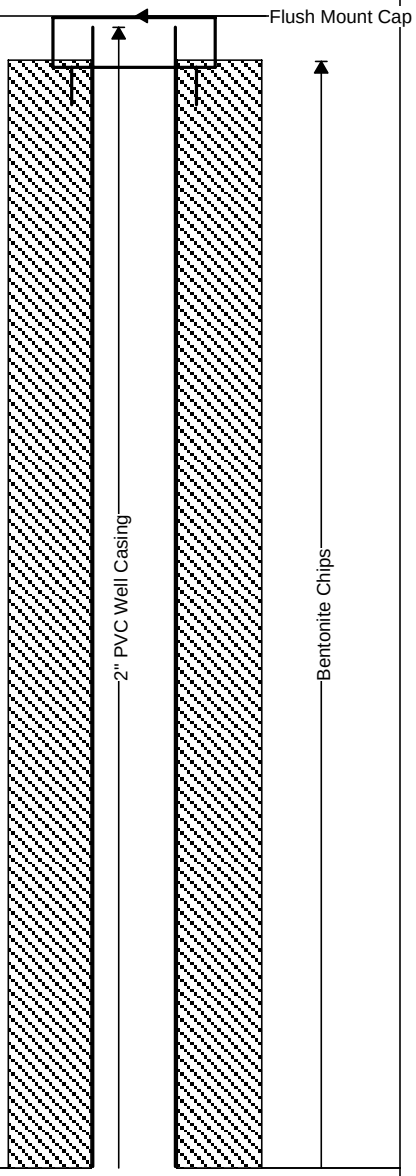
ATTACHMENT 1

Monitoring Well Installation Diagrams and Boring Logs

Tetra Tech EM Inc.
250 W. Court St., Suite 200W
Cincinnati, Ohio 45202

PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB1**	**SHEET: 1 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE: MW ☑ PIEZO ☐ SB ☐**	**TOTAL DEPTH: 56' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL: 26.41**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/18/13**	**FINISH DATE: 3/19/13**

SUBSURFACE PROFILE			SAMPLE			WELL CONSTRUCTION
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	
		Clay Soft Brown clay, pebbles throughout	0-2	0.0	50	
		Sand Brown sand	2-4	0.0	50	
5		**Sand and gravel** Lt. brown sand and gravel slight petroleum odor to 12'	4-6	0.0	60	
			6-8	0.0	60	
			8-10	0.0	50	
10			10-12	0.0	50	
			12-14	0.0	60	
15			14-16	0.0	60	
		Silty clay Hard gray silty clay, gravel throughout, wet at 20'	16-18	0.0	60	
			18-20	0.0	60	
20			20-22	0.0	100	
			22-24	0.0	100	
25			24-26	0.0	100	

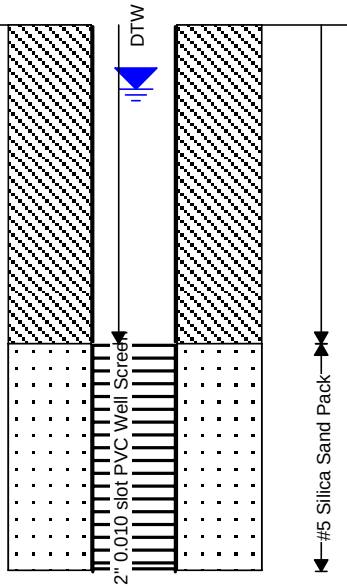


NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

Tetra Tech EM Inc.
250 W. Court St., Suite 200W
Cincinnati, Ohio 45202

PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB1**	**SHEET: 2 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE: MW ☑ PIEZO ☐ SB ☐**	**TOTAL DEPTH: 56' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL: 26.41**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/18/13**	**FINISH DATE: 3/19/13**

SUBSURFACE PROFILE			SAMPLE			WELL CONSTRUCTION
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	
			24-26			
			26-28	0.0	100	
		Silty clay Soft grey silty clay with some gravel	28-30	0.0	100	
30			30-32	0.0	100	
		Sand and gravel Brown sand and gravel, wet Groundwater sample from 32-37' bgs	32-34	0.0	100	
35			34-36	0.0	100	
			36-38	0.0	50	
			38-40	0.0	50	
40			40-42	0.0	10	
			42-44	0.0	10	
45			44-46	0.0	40	
			46-48	0.0	40	
		Sand Brown sand, wet, some large rocks at 50' Groundwater sample from 47-52' bgs	48-50	0.0	50	
50						



Borehole completed at 56' bgs

Formation cave-in and bentonite back fill to 37' bgs

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB1**	**SHEET: 3 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE: MW ☑ PIEZO ☐ SB ☐**	**TOTAL DEPTH: 56' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL: 26.41**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/18/13**	**FINISH DATE: 3/19/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
			50-52	0.0	50	
		Silty sand Gray silty sand. Wet to 55'	52-54	0.0	50	
55		**Silty sand** Gray silty sand, dry, brittle	54-56	0.0	60	
60						
65						
70						
75						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB2**	**SHEET: 1 of 2**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE:** **MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 48.0' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/19/13**	**FINISH DATE: 3/19/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
		No soil sampling Pushed to 17' bgs.				
5						
10						
15						
		Wet at 17' bgs. Insufficient amount of water for sample				
20						
		Pushed to 37' bgs.				
25						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB2**	**SHEET: 2 of 2**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE:** MW ☐ PIEZO ☐ SB ☑	**TOTAL DEPTH: 48.0' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/19/13**	**FINISH DATE: 3/19/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
30						
35						
		Groundwater sample from 37-42' bgs				
40						
		Pushed to 48' bgs. Insufficient amount of water for sample.				
45						Borehole completed at 48' bgs Borehole backfilled with cuttings and bentonite.
50						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB3**	**SHEET: 1 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE: MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 52.00**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/20/13**	**FINISH DATE: 3/20/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
		No soil sampling Pushed to 17' bgs.				
5						
10						
15						
20						
25						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB3**	**SHEET: 2 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE:** MW ☐ PIEZO ☐ SB ☑	**TOTAL DEPTH: 52.00**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/20/13**	**FINISH DATE: 3/20/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
30						
		Groundwater sample from 32-37' bgs				
35						
		No soil sampling Pushed to 47' bgs.				
40						
45						
		Groundwater sample from 47-52' bgs				
50						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB3**	**SHEET: 3 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE:** **MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 52.00**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/20/13**	**FINISH DATE: 3/20/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
55						Borehole completed at 52' bgs Borehole backfilled with cuttings and bentonite
60						
65						
70						
75						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB4**	**SHEET: 1 of 2**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE:** **MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 46.00**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/20/13**	**FINISH DATE: 3/20/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
		Clay Brown clay with large gravel. Based on drilling resistance.				
		Sand and gravel based on drilling resistance.				
5						
10						
15						
20		**No soil sampling** Pushed to 32' bgs				
25						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB4**	**SHEET: 2 of 2**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE:** **MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 46.00**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/20/13**	**FINISH DATE: 3/20/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
30						
		Groundwater sample from 32-34' bgs				
35		**No soil sampling** Pushed to 44' bgs.				
40						
		Groundwater sample from 44-46' bgs				
45						Borehole completed at 46' bgs Borehole backfilled with cuttings and bentonite
50						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB5**	**SHEET: 1 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE:** **MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 52.00**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/21/13**	**FINISH DATE: 3/21/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
		No soil sampling Pushed to 32' bgs				
5						
10						
15						
20						
25						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB5**	**SHEET: 2 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE:** **MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 52.00**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/21/13**	**FINISH DATE: 3/21/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
30						
		Groundwater sample from 32-35.5' bgs				
35		**No soil sampling** Pushed to 48.5' bgs				
40						
45						
		Groundwater sample from 48.5-52' bgs				
50						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB5**	**SHEET: 3 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE: MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 52.00**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/21/13**	**FINISH DATE: 3/21/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
						Borehole completed at 52' bgs Borehole backfilled with cuttings and bentonite
55						
60						
65						
70						
75						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB6**	**SHEET: 1 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE: MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 52.0**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/21/13**	**FINISH DATE: 3/21/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
		No soil sampling Pushed to 52' bgs				
5						
10						
15						
20						
25						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB6**	**SHEET: 2 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE:** MW ☐ PIEZO ☐ SB ☑	**TOTAL DEPTH: 52.0**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/21/13**	**FINISH DATE: 3/21/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
30						
35		**No soil sampling**				
40						
45						
50						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB6**	**SHEET: 3 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE:** **MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 52.0**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/21/13**	**FINISH DATE: 3/21/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
55						Borehole completed at 52' bgs Borehole backfilled with cuttings and bentonite
60						
65						
70						
75						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB7**	**SHEET: 1 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE:** MW ☐ PIEZO ☐ SB ☑	**TOTAL DEPTH: 52' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/21/13**	**FINISH DATE: 3/21/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
		No soil sampling Pushed to 32 bgs.				
5						
10						
15						
20						
25						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB7**	**SHEET: 2 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE: MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 52' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/21/13**	**FINISH DATE: 3/21/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
30						
		Groundwater sample from 32-37' bgs				
35						
		No soil sampling Pushed to 47' bgs.				
40						
45						
		Groundwater sample from 47-52' bgs.				
50						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB7**	**SHEET: 3 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE: MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 52' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/21/13**	**FINISH DATE: 3/21/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
						Borehole completed at 52' bgs Borehole backfilled with cuttings and bentonite
55						
60						
65						
70						
75						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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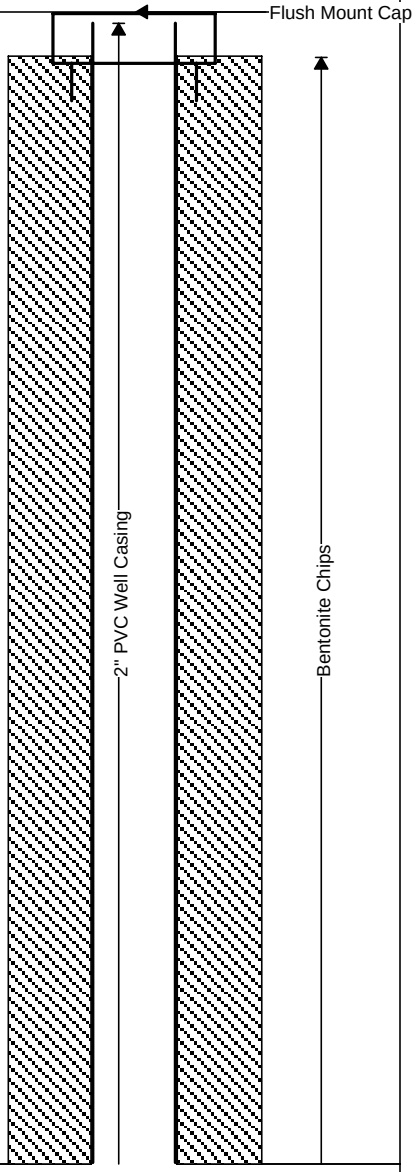
PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB8**	**SHEET: 1 of 2**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE: MW ☑ PIEZO ☐ SB ☐**	**TOTAL DEPTH: 45' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL: 25.55**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: BH**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/22/13**	**FINISH DATE: 3/22/13**

SUBSURFACE PROFILE			SAMPLE			WELL CONSTRUCTION
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	
		Topsoil Soft dk. brown topsoil	0-2	1.7	75	Flush Mount Cap
		Sand and gravel Brown fine to coarse sand and gravel	2-4	0.6	75	
5			4-6	1.6	75	
			6-8	1.7	75	
			8-10	1.7	75	
10			10-12	1.6	75	
			12-14	1.0	100	
		Clay Soft gray clay with some sand	14-16	2.0	100	
15		**Clay** Brown clay firm	16-18	4.1	80	
		Sand and gravel gray to brown sand and gravel, fine to coars, wet at 27' bgs	18-20	2.7	80	
		Groundwater sample at 30-35' bgs	20-22	4.2	80	
20			22-24	7.7	80	
			24-26	8.0	80	
25						



NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB8**	**SHEET: 2 of 2**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE:** MW ☑ PIEZO ☐ SB ☐	**TOTAL DEPTH: 45' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL: 25.55**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: BH**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/22/13**	**FINISH DATE: 3/22/13**

SUBSURFACE PROFILE			SAMPLE			WELL CONSTRUCTION
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	
			24-26			25.55 bgs
			26-28	9.9	80	
			28-30	4.5	75	
30			30-32	8.6	75	
			32-34	4.0	75	
35		**Clay** Very firm/stiff gray clay	34-36	3.0	75	
			36-38	0.0	100	
			38-40	0.0	100	
40			40-42	0.0	100	
			42-44	0.0	100	
			44-45	0.0	100	
45						
50						

2" 0.010 slot PVC Well Screen

#5 Silica Sand Pack

Borehole completed at 45' bgs

Formation cave-in and bentonite back fill to 36' bgs

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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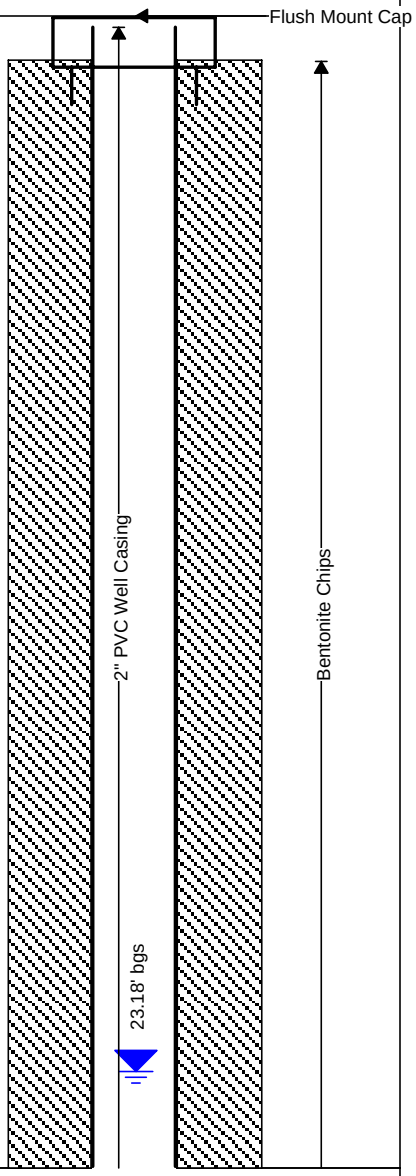
PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB9**	**SHEET: 1 of 2**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE:** MW ☑ PIEZO ☐ SB ☐	**TOTAL DEPTH: 47' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL: 23.18**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/25/13**	**FINISH DATE: 3/25/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
		No soil sampling Pushed to 24' bgs.				
25		**Sand and gravel** Based on drilling resistance				



NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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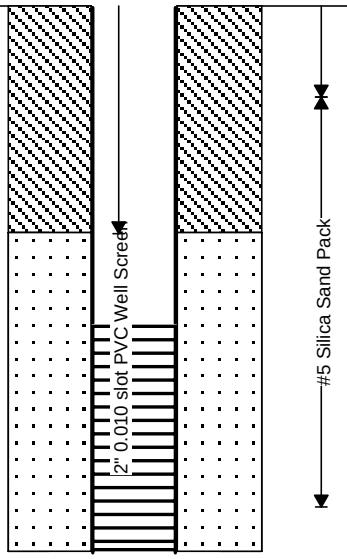
Cincinnati, Ohio 45202

PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB9**	**SHEET: 2 of 2**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE: MW ☑ PIEZO ☐ SB ☐**	**TOTAL DEPTH: 47' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL: 23.18**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/25/13**	**FINISH DATE: 3/25/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
30						
		No soil sampling Pushed to 42' bgs, Groundwater sample from 32-37' bgs.				
35						
40						
		Sand and gravel Based on drilling resistance, Groundwater sample from 42-47' bgs.				
45						
50						



Borehole completed at 47' bgs

Formation cave-in and bentonite back fill to 37' bgs

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB10**	**SHEET: 1 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE:** **MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 52' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/25/13**	**FINISH DATE: 3/25/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
		No soil sampling Pushed to 32 bgs.				
5						
10						
15						
20						
25						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB10**	**SHEET: 2 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE: MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 52' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/25/13**	**FINISH DATE: 3/25/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
30						
		Groundwater sample from 32-37' bgs				
35						
		No soil sampling Pushed to 47' bgs.				
40						
45						
		Groundwater sample from 47-52' bgs.				
50						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB10**	**SHEET: 3 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE: MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 52' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/25/13**	**FINISH DATE: 3/25/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
55						Borehole completed at 52' bgs Borehole backfilled with cuttings and bentonite
60						
65						
70						
75						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

Tetra Tech EM Inc.
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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB11**	**SHEET: 1 of 2**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE: MW ☑ PIEZO ☐ SB ☐**	**TOTAL DEPTH: 37' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL: 27.11**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/26/13**	**FINISH DATE: 3/26/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
		No soil sampling Pushed to 24' bgs.				Flush Mount Cap
5						2" PVC Well Casing
10						Bentonite Chips
15						
20						
25		**Sand and gravel** Sand and gravel, wet.				

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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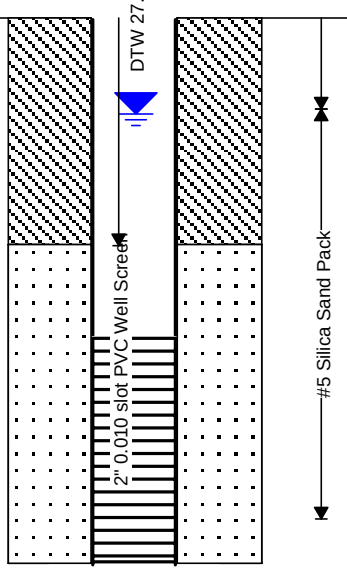
PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB11**	**SHEET: 2 of 2**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE:** MW ☑ PIEZO ☐ SB ☐	**TOTAL DEPTH: 37' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL: 27.11**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/26/13**	**FINISH DATE: 3/26/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
		Clay Very stiff gray clay.	24-28		100	
30		**No soil sampling** Pushed to 37' bgs. Groundwater sample 32-37' bgs				
35						
40						Borehole completed at 37' bgs
45						
50						



NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB12**	**SHEET: 1 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE: MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 52' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/27/13**	**FINISH DATE: 3/27/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
		No soil sampling Pushed to 32 bgs.				
5						
10						
15						
20						
25						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB12**	**SHEET: 2 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE:** **MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 52' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/27/13**	**FINISH DATE: 3/27/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
30						
		Groundwater sample from 32-36'bgs				
35						
		No soil sampling Pushed to 48' bgs.				
40						
45						
		Groundwater sample from 48-52' bgs.				
50						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB12**	**SHEET: 3 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE:** **MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 52' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/27/13**	**FINISH DATE: 3/27/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
55						Borehole completed at 52' bgs Borehole backfilled with cuttings and bentonite
60						
65						
70						
75						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB13**	**SHEET: 1 of 2**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE:** **MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 43' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/27/13**	**FINISH DATE: 3/27/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
		No soil sampling Pushed to 25 bgs.				
5						
10						
15						
20						
25						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB13**	**SHEET: 2 of 2**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE:** MW ☐ PIEZO ☐ SB ☑	**TOTAL DEPTH: 43' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/27/13**	**FINISH DATE: 3/27/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
		Groundwater sample from 25-29' 'bgs				
30		**No soil sampling** Pushed to 39' bgs.				
35						
40		Groundwater sample from 39-43' bgs.				
45						Borehole completed at 43' bgs Borehole backfilled with cuttings and bentonite
50						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB14**	**SHEET: 1 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE: MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 51.5' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/27/13**	**FINISH DATE: 3/27/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
		No soil sampling Pushed to 32' bgs.				
5						
10						
15						
20						
25						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

Tetra Tech EM Inc.
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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB14**	**SHEET: 2 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE:** **MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 51.5' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/27/13**	**FINISH DATE: 3/27/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
30						
		Groundwater sample from 32-36' 'bgs				
35						
		No soil sampling Pushed to 47.5' bgs.				
40						
45						
		Groundwater sample from 47.5-51.5' bgs.				
50						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB14**	**SHEET: 3 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE: MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 51.5' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/27/13**	**FINISH DATE: 3/27/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
55						Borehole completed at 51.5' bgs Borehole backfilled with cuttings and bentonite
60						
65						
70						
75						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

Tetra Tech EM Inc.
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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB15**	**SHEET: 1 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE:** **MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 51.0' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/28/13**	**FINISH DATE: 3/28/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
		No soil sampling Pushed to 32' bgs.				
5						
10						
15						
20						
25						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB15**	**SHEET: 2 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE: MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 51.0' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/28/13**	**FINISH DATE: 3/28/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
30						
		Groundwater sample from 32-35' 'bgs				
35		**No soil sampling** Pushed to 48' bgs.				
40						
45						
		Groundwater sample from 48-51' bgs.				
50						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB15**	**SHEET: 3 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE:** **MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 51.0' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/28/13**	**FINISH DATE: 3/28/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
						Borehole completed at 51' bgs Borehole backfilled with cuttings and bentonite
55						
60						
65						
70						
75						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

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PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB16**	**SHEET: 1 of 2**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE: MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 45.0' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/28/13**	**FINISH DATE: 3/28/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
		No soil sampling Pushed to 24' bgs.				
5						
10						
15						
20						
25		Groundwater sample from 24-28' 'bgs				

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

Tetra Tech EM Inc.
250 W. Court St., Suite 200W
Cincinnati, Ohio 45202

PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB16**	**SHEET: 2 of 2**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE: MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 45.0' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/28/13**	**FINISH DATE: 3/28/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
		No soil sampling Pushed to 41' bgs.				
30						
35						
40						
		Groundwater sample from 41-45' bgs.				
45						Borehole completed at 45' bgs Borehole backfilled with cuttings and bentonite
50						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

Tetra Tech EM Inc.
250 W. Court St., Suite 200W
Cincinnati, Ohio 45202

PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB17**	**SHEET: 1 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE: MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 51.5' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/29/13**	**FINISH DATE: 3/29/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
		No soil sampling Pushed to 32' bgs.				
5						
10						
15						
20						
25						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

Tetra Tech EM Inc.
250 W. Court St., Suite 200W
Cincinnati, Ohio 45202

PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB17**	**SHEET: 2 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE:** **MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 51.5' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/29/13**	**FINISH DATE: 3/29/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
30						
		Groundwater sample from 32-36' 'bgs				
35						
		No soil sampling Pushed to 47.5' bgs.				
40						
45						
		Groundwater sample from 47.5-51.5' bgs.				
50						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

Tetra Tech EM Inc.
250 W. Court St., Suite 200W
Cincinnati, Ohio 45202

PROJECT NAME: Ohio EPA- Mullins	**DRILLING COMPANY: Jersey West**	**BOREHOLE #: SB17**	**SHEET: 3 of 3**
PROJECT NUMBER: 103S171417	**RIG TYPE: Direct Push**	**ELEVATION: Not Measured**	
SITE NAME: Mullins Rubber Products	**BORING TYPE: MW ☐ PIEZO ☐ SB ☑**	**TOTAL DEPTH: 51.5' bgs**	
COUNTY: Montgomery	**DRILLER: Caprioni**	**STATIC WATER LEVEL:**	
CITY, STATE: Dayton, Ohio	**LOGGED BY: VF**	**BOREHOLE DIAMETER: 6"**	
PROJECT MANAGER: Guy Montfort	**SAMPLING METHOD: Continuous Core**	**START DATE: 3/29/13**	**FINISH DATE: 3/29/13**

SUBSURFACE PROFILE			SAMPLE			
DEPTH (FT)	LITHOLOGY	DESCRIPTION	SAMPLE ID	PID (ppm) "bagged"	RECOVERY (%)	WELL CONSTRUCTION
55						Borehole completed at 51.5' bgs Borehole backfilled with cuttings and bentonite
60						
65						
70						
75						

NOTES: ft or '= feet bgs = below ground surface * = Indicates Sample Submitted for Laboratory Analysis

ATTACHMENT 2

Laboratory Analytical Reports

A1

Field Chain-of-Custody Record

ALS 1303341

☐ REGULAR Status ☒ RUSH Status 24 hr TAT

Page 1 of 1

Cooler Temp: 2.0 (Lab only)

11328

Date 3-19 Purchase Order No. _____ Billing Address (if different)

Company Name Tetra Tech

Address 250 W Court #250W

Cincinnati (City) Oh (State) 45202 (Zip)

Person to Contact Vicky Farmer Project No. _____

Email Address Vicky.Farmer@Tetratech.com Sampling Site Mullins

Telephone (513) 333 3666 Date/Time of Collection _____

Fax Telephone ( ) _____ VAP ☐ Yes ☒ No

Sample Number	Site ID	Date	Time	Lab Sample Number	Preservation	Sample Type	Analysis Requested: VOC	No. of Containers
	GW1-47-52	3-19-13	1128	01	HCl	WATER	X	3
	GW1-32-37	↓	1202	02	↓	↓	↓	↓
	GW2-37-42	↓	1832	03	↓	↓	↓	↓
	~~GW2-37-42~~	↓			↓	↓	↓	↓

Notes:

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*.

Relinquished by: (Signature)	Time / Date	Received by: (Signature)	Time / Date
[signature]	2035/3-19-13	[signature]	3/19/13 20:35
Relinquished by: (Signature)	Time / Date	Received by: (Signature)	Time / Date
Relinquished by: (Signature)	Time / Date	Received by: (Signature)	Time / Date

Ship to: **ALS Environmental**
4388 Glendale - Milford Road
Cincinnati, Ohio 45242
Phone: 513.733.5336
Fax: 513.733.5347

Carrier / Airbill #

Date / Time:

20-Mar-2013

Vicky Farmer
Tetra Tech EM Inc.
250 W. Court St., Suite 200W
Cincinnati, OH 45202

Tel: (513) 333-3666
Fax: (513) 241-0354

Re: Mullins Work Order: **1303341**

Dear Vicky,

ALS Environmental received 3 samples on 19-Mar-2013 08:35 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 16.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Chris Gibson

Electronically approved by: Chris Gibson

Chris Gibson
Project Manager

ALS Environmental

Date: 20-Mar-13

Client: Tetra Tech EM Inc.
Project: Mullins
Work Order: **1303341**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1303341-01	GW1-47-52	Water		3/19/2013 11:28	3/19/2013 20:35	☐
1303341-02	GW1-32-37	Water		3/19/2013 12:02	3/19/2013 20:35	☐
1303341-03	GW2-37-42	Water		3/19/2013 18:32	3/19/2013 20:35	☐

ALS Environmental

Date: 20-Mar-13

Client: Tetra Tech EM Inc.
Project: Mullins
Work Order: 1303341

Case Narrative

The analytical data provided relates directly to the samples received by ALS Laboratory Group and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

ALS Environmental

Date: *20-Mar-13*

Client: Tetra Tech EM Inc.
Project: Mullins
Sample ID: GW1-47-52
Collection Date: 3/19/2013 11:28 AM

Work Order: 1303341
Lab ID: 1303341-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260**			Analyst: **LAK**
1,1,1,2-Tetrachloroethane	ND		5.0	µg/L	1	3/20/2013 12:34 PM
1,1,1-Trichloroethane	ND		5.0	µg/L	1	3/20/2013 12:34 PM
1,1,2,2-Tetrachloroethane	ND		5.0	µg/L	1	3/20/2013 12:34 PM
1,1,2-Trichloroethane	ND		5.0	µg/L	1	3/20/2013 12:34 PM
1,1-Dichloroethane	ND		5.0	µg/L	1	3/20/2013 12:34 PM
1,1-Dichloroethene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
1,1-Dichloropropene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
1,2,3-Trichlorobenzene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
1,2,3-Trichloropropane	ND		5.0	µg/L	1	3/20/2013 12:34 PM
1,2,4-Trichlorobenzene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
1,2,4-Trimethylbenzene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
1,2-Dibromo-3-chloropropane	ND		5.0	µg/L	1	3/20/2013 12:34 PM
1,2-Dibromoethane	ND		5.0	µg/L	1	3/20/2013 12:34 PM
1,2-Dichlorobenzene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
1,2-Dichloroethane	ND		5.0	µg/L	1	3/20/2013 12:34 PM
1,2-Dichloropropane	ND		5.0	µg/L	1	3/20/2013 12:34 PM
1,3,5-Trimethylbenzene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
1,3-Dichlorobenzene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
1,3-Dichloropropane	ND		5.0	µg/L	1	3/20/2013 12:34 PM
1,4-Dichlorobenzene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
2,2-Dichloropropane	ND		5.0	µg/L	1	3/20/2013 12:34 PM
2-Butanone	ND		5.0	µg/L	1	3/20/2013 12:34 PM
2-Chlorotoluene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
2-Hexanone	ND		5.0	µg/L	1	3/20/2013 12:34 PM
4-Chlorotoluene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
4-Methyl-2-pentanone	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Acetone	**8.3**		**5.0**	**µg/L**	1	3/20/2013 12:34 PM
Benzene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Bromobenzene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Bromochloromethane	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Bromodichloromethane	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Bromoform	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Bromomethane	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Carbon disulfide	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Carbon tetrachloride	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Chlorobenzene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Chloroethane	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Chloroform	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Chloromethane	ND		5.0	µg/L	1	3/20/2013 12:34 PM

Note:

ALS Environmental

Date: *20-Mar-13*

Client: Tetra Tech EM Inc.
Project: Mullins
Work Order: 1303341
Sample ID: GW1-47-52
Lab ID: 1303341-01
Collection Date: 3/19/2013 11:28 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
cis-1,2-Dichloroethene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
cis-1,3-Dichloropropene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Dibromochloromethane	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Dibromomethane	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Dichlorodifluoromethane	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Ethylbenzene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Hexachlorobutadiene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Isopropylbenzene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
m,p-Xylene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Methyl tert-butyl ether	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Methylene chloride	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Naphthalene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
n-Butylbenzene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
n-Propylbenzene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
o-Xylene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
p-Isopropyltoluene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
sec-Butylbenzene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Styrene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
tert-Butylbenzene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Tetrachloroethene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Toluene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
trans-1,2-Dichloroethene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
trans-1,3-Dichloropropene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Trichloroethene	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Trichlorofluoromethane	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Vinyl chloride	ND		2.0	µg/L	1	3/20/2013 12:34 PM
Xylenes, Total	ND		5.0	µg/L	1	3/20/2013 12:34 PM
Surr: 4-Bromofluorobenzene	*94.2*		*61-131*	*%REC*	1	3/20/2013 12:34 PM
Surr: Dibromofluoromethane	*96.7*		*87-126*	*%REC*	1	3/20/2013 12:34 PM
Surr: Toluene-d8	*99.5*		*84-111*	*%REC*	1	3/20/2013 12:34 PM

Note:

ALS Environmental

Date: *20-Mar-13*

Client: Tetra Tech EM Inc.
Project: Mullins
Sample ID: GW1-32-37
Collection Date: 3/19/2013 12:02 PM

Work Order: 1303341
Lab ID: 1303341-02
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260**			Analyst: **LAK**
1,1,1,2-Tetrachloroethane	ND		5.0	µg/L	1	3/20/2013 01:04 PM
1,1,1-Trichloroethane	ND		5.0	µg/L	1	3/20/2013 01:04 PM
1,1,2,2-Tetrachloroethane	ND		5.0	µg/L	1	3/20/2013 01:04 PM
1,1,2-Trichloroethane	ND		5.0	µg/L	1	3/20/2013 01:04 PM
1,1-Dichloroethane	ND		5.0	µg/L	1	3/20/2013 01:04 PM
1,1-Dichloroethene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
1,1-Dichloropropene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
1,2,3-Trichlorobenzene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
1,2,3-Trichloropropane	ND		5.0	µg/L	1	3/20/2013 01:04 PM
1,2,4-Trichlorobenzene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
1,2,4-Trimethylbenzene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
1,2-Dibromo-3-chloropropane	ND		5.0	µg/L	1	3/20/2013 01:04 PM
1,2-Dibromoethane	ND		5.0	µg/L	1	3/20/2013 01:04 PM
1,2-Dichlorobenzene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
1,2-Dichloroethane	ND		5.0	µg/L	1	3/20/2013 01:04 PM
1,2-Dichloropropane	ND		5.0	µg/L	1	3/20/2013 01:04 PM
1,3,5-Trimethylbenzene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
1,3-Dichlorobenzene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
1,3-Dichloropropane	ND		5.0	µg/L	1	3/20/2013 01:04 PM
1,4-Dichlorobenzene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
2,2-Dichloropropane	ND		5.0	µg/L	1	3/20/2013 01:04 PM
2-Butanone	ND		5.0	µg/L	1	3/20/2013 01:04 PM
2-Chlorotoluene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
2-Hexanone	ND		5.0	µg/L	1	3/20/2013 01:04 PM
4-Chlorotoluene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
4-Methyl-2-pentanone	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Acetone	**17**		**5.0**	**µg/L**	1	3/20/2013 01:04 PM
Benzene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Bromobenzene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Bromochloromethane	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Bromodichloromethane	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Bromoform	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Bromomethane	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Carbon disulfide	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Carbon tetrachloride	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Chlorobenzene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Chloroethane	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Chloroform	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Chloromethane	ND		5.0	µg/L	1	3/20/2013 01:04 PM

Note:

ALS Environmental

Date: *20-Mar-13*

Client: Tetra Tech EM Inc.
Project: Mullins
Work Order: 1303341
Sample ID: GW1-32-37
Lab ID: 1303341-02
Collection Date: 3/19/2013 12:02 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
cis-1,2-Dichloroethene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
cis-1,3-Dichloropropene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Dibromochloromethane	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Dibromomethane	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Dichlorodifluoromethane	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Ethylbenzene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Hexachlorobutadiene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Isopropylbenzene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
m,p-Xylene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Methyl tert-butyl ether	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Methylene chloride	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Naphthalene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
n-Butylbenzene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
n-Propylbenzene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
o-Xylene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
p-Isopropyltoluene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
sec-Butylbenzene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Styrene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
tert-Butylbenzene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Tetrachloroethene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Toluene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
trans-1,2-Dichloroethene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
trans-1,3-Dichloropropene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Trichloroethene	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Trichlorofluoromethane	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Vinyl chloride	ND		2.0	µg/L	1	3/20/2013 01:04 PM
Xylenes, Total	ND		5.0	µg/L	1	3/20/2013 01:04 PM
Surr: 4-Bromofluorobenzene	*92.9*		*61-131*	*%REC*	1	3/20/2013 01:04 PM
Surr: Dibromofluoromethane	*98.5*		*87-126*	*%REC*	1	3/20/2013 01:04 PM
Surr: Toluene-d8	*96.8*		*84-111*	*%REC*	1	3/20/2013 01:04 PM

Note:

ALS Environmental

Date: *20-Mar-13*

Client: Tetra Tech EM Inc.
Project: Mullins
Sample ID: GW2-37-42
Collection Date: 3/19/2013 06:32 PM

Work Order: 1303341
Lab ID: 1303341-03
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260**			Analyst: **LAK**
1,1,1,2-Tetrachloroethane	ND		5.0	µg/L	1	3/20/2013 01:34 PM
1,1,1-Trichloroethane	ND		5.0	µg/L	1	3/20/2013 01:34 PM
1,1,2,2-Tetrachloroethane	ND		5.0	µg/L	1	3/20/2013 01:34 PM
1,1,2-Trichloroethane	ND		5.0	µg/L	1	3/20/2013 01:34 PM
1,1-Dichloroethane	ND		5.0	µg/L	1	3/20/2013 01:34 PM
1,1-Dichloroethene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
1,1-Dichloropropene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
1,2,3-Trichlorobenzene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
1,2,3-Trichloropropane	ND		5.0	µg/L	1	3/20/2013 01:34 PM
1,2,4-Trichlorobenzene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
1,2,4-Trimethylbenzene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
1,2-Dibromo-3-chloropropane	ND		5.0	µg/L	1	3/20/2013 01:34 PM
1,2-Dibromoethane	ND		5.0	µg/L	1	3/20/2013 01:34 PM
1,2-Dichlorobenzene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
1,2-Dichloroethane	ND		5.0	µg/L	1	3/20/2013 01:34 PM
1,2-Dichloropropane	ND		5.0	µg/L	1	3/20/2013 01:34 PM
1,3,5-Trimethylbenzene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
1,3-Dichlorobenzene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
1,3-Dichloropropane	ND		5.0	µg/L	1	3/20/2013 01:34 PM
1,4-Dichlorobenzene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
2,2-Dichloropropane	ND		5.0	µg/L	1	3/20/2013 01:34 PM
2-Butanone	ND		5.0	µg/L	1	3/20/2013 01:34 PM
2-Chlorotoluene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
2-Hexanone	ND		5.0	µg/L	1	3/20/2013 01:34 PM
4-Chlorotoluene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
4-Methyl-2-pentanone	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Acetone	**14**		**5.0**	**µg/L**	1	3/20/2013 01:34 PM
Benzene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Bromobenzene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Bromochloromethane	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Bromodichloromethane	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Bromoform	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Bromomethane	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Carbon disulfide	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Carbon tetrachloride	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Chlorobenzene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Chloroethane	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Chloroform	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Chloromethane	ND		5.0	µg/L	1	3/20/2013 01:34 PM

Note:

ALS Environmental

Date: *20-Mar-13*

Client: Tetra Tech EM Inc.
Project: Mullins
Work Order: 1303341
Sample ID: GW2-37-42
Lab ID: 1303341-03
Collection Date: 3/19/2013 06:32 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
cis-1,2-Dichloroethene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
cis-1,3-Dichloropropene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Dibromochloromethane	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Dibromomethane	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Dichlorodifluoromethane	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Ethylbenzene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Hexachlorobutadiene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Isopropylbenzene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
m,p-Xylene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Methyl tert-butyl ether	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Methylene chloride	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Naphthalene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
n-Butylbenzene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
n-Propylbenzene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
o-Xylene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
p-Isopropyltoluene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
sec-Butylbenzene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Styrene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
tert-Butylbenzene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Tetrachloroethene	**80**		**5.0**	**µg/L**	1	3/20/2013 01:34 PM
Toluene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
trans-1,2-Dichloroethene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
trans-1,3-Dichloropropene	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Trichloroethene	**6.3**		**5.0**	**µg/L**	1	3/20/2013 01:34 PM
Trichlorofluoromethane	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Vinyl chloride	ND		2.0	µg/L	1	3/20/2013 01:34 PM
Xylenes, Total	ND		5.0	µg/L	1	3/20/2013 01:34 PM
Surr: 4-Bromofluorobenzene	*96.6*		*61-131*	*%REC*	1	3/20/2013 01:34 PM
Surr: Dibromofluoromethane	*101*		*87-126*	*%REC*	1	3/20/2013 01:34 PM
Surr: Toluene-d8	*100*		*84-111*	*%REC*	1	3/20/2013 01:34 PM

Note:

Batch ID: **R97814** Instrument ID: **VMS1** Method: **SW8260**

MBLK Sample ID: **MBLK-R97814** Units: **µg/L** Analysis Date: **3/20/2013 11:04 AM**

Client ID: Run ID: **VMS1_130320A** SeqNo: **581085** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	5.0								
1,1,1-Trichloroethane	ND	5.0								
1,1,2,2-Tetrachloroethane	ND	5.0								
1,1,2-Trichloroethane	ND	5.0								
1,1-Dichloroethane	ND	5.0								
1,1-Dichloroethene	ND	5.0								
1,1-Dichloropropene	ND	5.0								
1,2,3-Trichlorobenzene	ND	5.0								
1,2,3-Trichloropropane	ND	5.0								
1,2,4-Trichlorobenzene	ND	5.0								
1,2,4-Trimethylbenzene	ND	5.0								
1,2-Dibromo-3-chloropropane	ND	5.0								
1,2-Dibromoethane	ND	5.0								
1,2-Dichlorobenzene	ND	5.0								
1,2-Dichloroethane	ND	5.0								
1,2-Dichloropropane	ND	5.0								
1,3,5-Trimethylbenzene	ND	5.0								
1,3-Dichlorobenzene	ND	5.0								
1,3-Dichloropropane	ND	5.0								
1,4-Dichlorobenzene	ND	5.0								
2,2-Dichloropropane	ND	5.0								
2-Butanone	ND	5.0								
2-Chlorotoluene	ND	5.0								
2-Hexanone	ND	5.0								
4-Chlorotoluene	ND	5.0								
4-Methyl-2-pentanone	ND	5.0								
Acetone	ND	5.0								
Benzene	ND	5.0								
Bromobenzene	ND	5.0								
Bromochloromethane	ND	5.0								
Bromodichloromethane	ND	5.0								
Bromoform	ND	5.0								
Bromomethane	ND	5.0								
Carbon disulfide	ND	5.0								
Carbon tetrachloride	ND	5.0								
Chlorobenzene	ND	5.0								
Chloroethane	ND	5.0								
Chloroform	ND	5.0								
Chloromethane	ND	5.0								
cis-1,2-Dichloroethene	ND	5.0								
cis-1,3-Dichloropropene	ND	5.0								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **R97814** Instrument ID: **VMS1** Method: **SW8260**

Dibromochloromethane	ND	5.0					
Dibromomethane	ND	5.0					
Dichlorodifluoromethane	ND	5.0					
Ethylbenzene	ND	5.0					
Hexachlorobutadiene	ND	5.0					
Isopropylbenzene	ND	5.0					
m,p-Xylene	ND	5.0					
Methyl tert-butyl ether	ND	5.0					
Methylene chloride	ND	5.0					
Naphthalene	ND	5.0					
n-Butylbenzene	ND	5.0					
n-Propylbenzene	ND	5.0					
o-Xylene	ND	5.0					
p-Isopropyltoluene	ND	5.0					
sec-Butylbenzene	ND	5.0					
Styrene	ND	5.0					
tert-Butylbenzene	ND	5.0					
Tetrachloroethene	ND	5.0					
Toluene	ND	5.0					
trans-1,2-Dichloroethene	ND	5.0					
trans-1,3-Dichloropropene	ND	5.0					
Trichloroethene	ND	5.0					
Trichlorofluoromethane	ND	5.0					
Vinyl chloride	ND	2.0					
Xylenes, Total	ND	5.0					
Surr: 4-Bromofluorobenzene	48.02	0	*50*	0	*96*	*61-131*	0
Surr: Dibromofluoromethane	48.72	0	*50*	0	*97.4*	*87-126*	0
Surr: Toluene-d8	50.2	0	*50*	0	*100*	*84-111*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech EM Inc.
Work Order: 1303341
Project: Mullins

QC BATCH REPORT

Batch ID: **R97814** Instrument ID: **VMS1** Method: **SW8260**

LCS Sample ID: **LCS-R97814** Units: **µg/L** Analysis Date: **3/20/2013 08:35 AM**
Client ID: Run ID: **VMS1_130320A** SeqNo: **581080** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	52.11	5.0	50	0	104	48.4-140	0			
1,1-Dichloroethene	47.02	5.0	50	0	94	45.5-150	0			
1,2-Dichloroethane	53.66	5.0	50	0	107	46.5-141	0			
1,3-Dichlorobenzene	49.7	5.0	50	0	99.4	42.5-133	0			
1,4-Dichlorobenzene	47.3	5.0	50	0	94.6	38.9-136	0			
Benzene	49.85	5.0	50	0	99.7	50.7-134	0			
Carbon tetrachloride	52.48	5.0	50	0	105	45.5-143	0			
Chlorobenzene	48.62	5.0	50	0	97.2	45-133	0			
Chloroform	49.47	5.0	50	0	98.9	52.4-136	0			
cis-1,2-Dichloroethene	49.49	5.0	50	0	99	49.7-138	0			
Ethylbenzene	48.89	5.0	50	0	97.8	37.8-145	0			
m,p-Xylene	97.99	5.0	100	0	98	25.1-163	0			
Styrene	51.81	5.0	50	0	104	26.3-172	0			
Tetrachloroethene	49.42	5.0	50	0	98.8	37.3-139	0			
Toluene	49.42	5.0	50	0	98.8	44-135	0			
Trichloroethene	51.58	5.0	50	0	103	46.9-134	0			
Surr: 4-Bromofluorobenzene	49.72	0	*50*	0	*99.4*	*61-131*	0			
Surr: Dibromofluoromethane	50.41	0	*50*	0	*101*	*87-126*	0			
Surr: Toluene-d8	51.11	0	*50*	0	*102*	*84-111*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech EM Inc.
Work Order: 1303341
Project: Mullins

QC BATCH REPORT

Batch ID: **R97814** Instrument ID: **VMS1** Method: **SW8260**

MS Sample ID: **1303188-02A MS** Units: **µg/L** Analysis Date: **3/20/2013 11:34 AM**
Client ID: Run ID: **VMS1_130320A** SeqNo: **581086** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	51.82	5.0	50	0	104	47.4-141	0			
1,1-Dichloroethene	48.85	5.0	50	0	97.7	56.3-140	0			
1,2-Dichloroethane	53.43	5.0	50	0	107	50.1-139	0			
1,3-Dichlorobenzene	51.46	5.0	50	0	103	53-127	0			
1,4-Dichlorobenzene	50.08	5.0	50	0	100	53.4-129	0			
Benzene	49.85	5.0	50	0	99.7	52.8-136	0			
Carbon tetrachloride	53.12	5.0	50	0	106	48.1-141	0			
Chlorobenzene	50.65	5.0	50	0	101	52.4-132	0			
Chloroform	50.49	5.0	50	0	101	52.9-136	0			
cis-1,2-Dichloroethene	51.42	5.0	50	0	103	63.5-128	0			
Ethylbenzene	51.05	5.0	50	0	102	46.5-146	0			
m,p-Xylene	101.7	5.0	100	0	102	38.2-167	0			
Styrene	52.12	5.0	50	0	104	20.9-184	0			
Tetrachloroethene	51.72	5.0	50	0	103	55.2-134	0			
Toluene	50.09	5.0	50	0	100	45.1-138	0			
Trichloroethene	51.21	5.0	50	0	102	52.8-133	0			
Surr: 4-Bromofluorobenzene	50.49	0	*50*	0	*101*	*61-131*	0			
Surr: Dibromofluoromethane	50.57	0	*50*	0	*101*	*87-126*	0			
Surr: Toluene-d8	50.66	0	*50*	0	*101*	*84-111*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech EM Inc.
Work Order: 1303341
Project: Mullins

QC BATCH REPORT

Batch ID: **R97814** Instrument ID: **VMS1** Method: **SW8260**

MSD Sample ID: **1303188-02A MSD** Units: **µg/L** Analysis Date: **3/20/2013 12:04 PM**
Client ID: Run ID: **VMS1_130320A** SeqNo: **581087** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	54.11	5.0	50	0	108	47.4-141	51.82	4.32	20	
1,1-Dichloroethene	49.25	5.0	50	0	98.5	56.3-140	48.85	0.815	20	
1,2-Dichloroethane	53.88	5.0	50	0	108	50.1-139	53.43	0.839	20	
1,3-Dichlorobenzene	53.27	5.0	50	0	107	53-127	51.46	3.46	20	
1,4-Dichlorobenzene	51.67	5.0	50	0	103	53.4-129	50.08	3.13	20	
Benzene	50.35	5.0	50	0	101	52.8-136	49.85	0.998	20	
Carbon tetrachloride	55.32	5.0	50	0	111	48.1-141	53.12	4.06	20	
Chlorobenzene	50.57	5.0	50	0	101	52.4-132	50.65	0.158	20	
Chloroform	51.54	5.0	50	0	103	52.9-136	50.49	2.06	20	
cis-1,2-Dichloroethene	51.38	5.0	50	0	103	63.5-128	51.42	0.0778	20	
Ethylbenzene	52.69	5.0	50	0	105	46.5-146	51.05	3.16	20	
m,p-Xylene	104.4	5.0	100	0	104	38.2-167	101.7	2.64	20	
Styrene	53.65	5.0	50	0	107	20.9-184	52.12	2.89	20	
Tetrachloroethene	53.54	5.0	50	0	107	55.2-134	51.72	3.46	20	
Toluene	51.37	5.0	50	0	103	45.1-138	50.09	2.52	20	
Trichloroethene	52.34	5.0	50	0	105	52.8-133	51.21	2.18	20	
Surr: 4-Bromofluorobenzene	49.49	0	*50*	0	*99*	*61-131*	50.49	*2*		
Surr: Dibromofluoromethane	50.79	0	*50*	0	*102*	*87-126*	50.57	*0.434*		
Surr: Toluene-d8	50.88	0	*50*	0	*102*	*84-111*	50.66	*0.433*		

The following samples were analyzed in this batch: 1303341-01A 1303341-02A 1303341-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Environmental

Date: 20-Mar-13

Client: Tetra Tech EM Inc.
Project: Mullins
WorkOrder: **1303341**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
E	EPA Method
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SDL	Sample Detection Limit
SW	SW-846 Method

Units Reported	Description
µg/L	

ALS Environmental

Sample Receipt Checklist

Client Name: **TETRATECH-CINCINNATI** Date/Time Received: **19-Mar-13 20:35**

Work Order: **1303341** Received by: **SLW**

Checklist completed by: Jan Wilcox (eSignature) 20-Mar-13 (Date) Reviewed by: Chris Gibson (eSignature) 20-Mar-13 (Date)

Matrices:

Carrier name: Client

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.0		
Cooler(s)/Kit(s):			
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☐	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

A1

Field Chain-of-Custody Record

1303380

☐ REGULAR Status ☒ RUSH Status 24hr

Page 1 of 1

Cooler Temp 2.1 (Lab only)

11329

Date 3-20 Purchase Order No. _____ Billing Address (if different)

Company Name Tetra Tech

Address 250 W Court St 100W

Cinci (City) Oh (State) 45202 (Zip)

Person to Contact Vicky Farmer Project No. _____

Email Address Vicky.Farmer@tetratech.com Sampling Site _____

Telephone (513) 333 3466 Date/Time of Collection _____

Fax Telephone ( ) _____ VAP ☐ Yes ☐ No

Sample Number	Site ID	Date	Time	Lab Sample Number	Preservation	Sample Type	Analysis Requested: VOC									No. of Containers
	GW3-32-37	3-20-13	1340	-01	HQ	Water	X									

Notes:

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*.

Relinquished by: (Signature)	Time / Date	Received by: (Signature)	Time / Date
V Farmer	1951/320		19:51 3/20/13
Relinquished by: (Signature)	Time / Date	Received by: (Signature)	Time / Date
Relinquished by: (Signature)	Time / Date	Received by: (Signature)	Time / Date

Ship to: **ALS Environmental**
4388 Glendale - Milford Road
Cincinnati, Ohio 45242
Phone: 513.733.5336
Fax: 513.733.5347

Carrier / Airbill #

Date / Time:

21-Mar-2013

Vicky Farmer
Tetra Tech EM Inc.
250 W. Court St., Suite 200W
Cincinnati, OH 45202

Tel: (513) 333-3666
Fax: (513) 241-0354

Re: Mullins Work Order: **1303380**

Dear Vicky,

ALS Environmental received 1 sample on 20-Mar-2013 07:51 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 12.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Chris Gibson

Electronically approved by: Chris Gibson

Chris Gibson
Project Manager

ALS Environmental

Date: 21-Mar-13

Client: Tetra Tech EM Inc.
Project: Mullins
Work Order: **1303380**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1303380-01	GW3-32-37	Water		3/20/2013 13:40	3/20/2013 19:51	☐

ALS Environmental

Date: 21-Mar-13

Client: Tetra Tech EM Inc.
Project: Mullins
Work Order: 1303380

Case Narrative

The analytical data provided relates directly to the samples received by ALS Laboratory Group and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

ALS Environmental

Date: *21-Mar-13*

Client: Tetra Tech EM Inc.
Project: Mullins
Sample ID: GW3-32-37
Collection Date: 3/20/2013 01:40 PM

Work Order: 1303380
Lab ID: 1303380-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260**			Analyst: **LAK**
1,1,1,2-Tetrachloroethane	ND		5.0	µg/L	1	3/21/2013 09:32 AM
1,1,1-Trichloroethane	ND		5.0	µg/L	1	3/21/2013 09:32 AM
1,1,2,2-Tetrachloroethane	ND		5.0	µg/L	1	3/21/2013 09:32 AM
1,1,2-Trichloroethane	ND		5.0	µg/L	1	3/21/2013 09:32 AM
1,1-Dichloroethane	ND		5.0	µg/L	1	3/21/2013 09:32 AM
1,1-Dichloroethene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
1,1-Dichloropropene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
1,2,3-Trichlorobenzene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
1,2,3-Trichloropropane	ND		5.0	µg/L	1	3/21/2013 09:32 AM
1,2,4-Trichlorobenzene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
1,2,4-Trimethylbenzene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
1,2-Dibromo-3-chloropropane	ND		5.0	µg/L	1	3/21/2013 09:32 AM
1,2-Dibromoethane	ND		5.0	µg/L	1	3/21/2013 09:32 AM
1,2-Dichlorobenzene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
1,2-Dichloroethane	ND		5.0	µg/L	1	3/21/2013 09:32 AM
1,2-Dichloropropane	ND		5.0	µg/L	1	3/21/2013 09:32 AM
1,3,5-Trimethylbenzene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
1,3-Dichlorobenzene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
1,3-Dichloropropane	ND		5.0	µg/L	1	3/21/2013 09:32 AM
1,4-Dichlorobenzene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
2,2-Dichloropropane	ND		5.0	µg/L	1	3/21/2013 09:32 AM
2-Butanone	ND		5.0	µg/L	1	3/21/2013 09:32 AM
2-Chlorotoluene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
2-Hexanone	ND		5.0	µg/L	1	3/21/2013 09:32 AM
4-Chlorotoluene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
4-Methyl-2-pentanone	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Acetone	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Benzene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Bromobenzene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Bromochloromethane	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Bromodichloromethane	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Bromoform	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Bromomethane	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Carbon disulfide	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Carbon tetrachloride	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Chlorobenzene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Chloroethane	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Chloroform	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Chloromethane	ND		5.0	µg/L	1	3/21/2013 09:32 AM

Note:

ALS Environmental

Date: *21-Mar-13*

Client: Tetra Tech EM Inc.
Project: Mullins
Sample ID: GW3-32-37
Collection Date: 3/20/2013 01:40 PM

Work Order: 1303380
Lab ID: 1303380-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
cis-1,2-Dichloroethene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
cis-1,3-Dichloropropene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Dibromochloromethane	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Dibromomethane	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Dichlorodifluoromethane	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Ethylbenzene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Hexachlorobutadiene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Isopropylbenzene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
m,p-Xylene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Methyl tert-butyl ether	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Methylene chloride	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Naphthalene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
n-Butylbenzene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
n-Propylbenzene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
o-Xylene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
p-Isopropyltoluene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
sec-Butylbenzene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Styrene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
tert-Butylbenzene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Tetrachloroethene	**140**		**5.0**	**µg/L**	1	3/21/2013 09:32 AM
Toluene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
trans-1,2-Dichloroethene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
trans-1,3-Dichloropropene	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Trichloroethene	**24**		**5.0**	**µg/L**	1	3/21/2013 09:32 AM
Trichlorofluoromethane	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Vinyl chloride	ND		2.0	µg/L	1	3/21/2013 09:32 AM
Xylenes, Total	ND		5.0	µg/L	1	3/21/2013 09:32 AM
Surr: 4-Bromofluorobenzene	*95.5*		*61-131*	*%REC*	1	3/21/2013 09:32 AM
Surr: Dibromofluoromethane	*96.0*		*87-126*	*%REC*	1	3/21/2013 09:32 AM
Surr: Toluene-d8	*97.3*		*84-111*	*%REC*	1	3/21/2013 09:32 AM

Note:

Batch ID: **R97833** Instrument ID: **VMS1** Method: **SW8260**

MBLK Sample ID: **MBLK-R97833** Units: **µg/L** Analysis Date: **3/21/2013 08:33 AM**

Client ID: Run ID: **VMS1_130321A** SeqNo: **581370** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	5.0								
1,1,1-Trichloroethane	ND	5.0								
1,1,2,2-Tetrachloroethane	ND	5.0								
1,1,2-Trichloroethane	ND	5.0								
1,1-Dichloroethane	ND	5.0								
1,1-Dichloroethene	ND	5.0								
1,1-Dichloropropene	ND	5.0								
1,2,3-Trichlorobenzene	ND	5.0								
1,2,3-Trichloropropane	ND	5.0								
1,2,4-Trichlorobenzene	ND	5.0								
1,2,4-Trimethylbenzene	ND	5.0								
1,2-Dibromo-3-chloropropane	ND	5.0								
1,2-Dibromoethane	ND	5.0								
1,2-Dichlorobenzene	ND	5.0								
1,2-Dichloroethane	ND	5.0								
1,2-Dichloropropane	ND	5.0								
1,3,5-Trimethylbenzene	ND	5.0								
1,3-Dichlorobenzene	ND	5.0								
1,3-Dichloropropane	ND	5.0								
1,4-Dichlorobenzene	ND	5.0								
2,2-Dichloropropane	ND	5.0								
2-Butanone	ND	5.0								
2-Chlorotoluene	ND	5.0								
2-Hexanone	ND	5.0								
4-Chlorotoluene	ND	5.0								
4-Methyl-2-pentanone	ND	5.0								
Acetone	ND	5.0								
Benzene	ND	5.0								
Bromobenzene	ND	5.0								
Bromochloromethane	ND	5.0								
Bromodichloromethane	ND	5.0								
Bromoform	ND	5.0								
Bromomethane	ND	5.0								
Carbon disulfide	ND	5.0								
Carbon tetrachloride	ND	5.0								
Chlorobenzene	ND	5.0								
Chloroethane	ND	5.0								
Chloroform	ND	5.0								
Chloromethane	ND	5.0								
cis-1,2-Dichloroethene	ND	5.0								
cis-1,3-Dichloropropene	ND	5.0								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **R97833** Instrument ID: **VMS1** Method: **SW8260**

Dibromochloromethane	ND	5.0					
Dibromomethane	ND	5.0					
Dichlorodifluoromethane	ND	5.0					
Ethylbenzene	ND	5.0					
Hexachlorobutadiene	ND	5.0					
Isopropylbenzene	ND	5.0					
m,p-Xylene	ND	5.0					
Methyl tert-butyl ether	ND	5.0					
Methylene chloride	ND	5.0					
Naphthalene	ND	5.0					
n-Butylbenzene	ND	5.0					
n-Propylbenzene	ND	5.0					
o-Xylene	ND	5.0					
p-Isopropyltoluene	ND	5.0					
sec-Butylbenzene	ND	5.0					
Styrene	ND	5.0					
tert-Butylbenzene	ND	5.0					
Tetrachloroethene	ND	5.0					
Toluene	ND	5.0					
trans-1,2-Dichloroethene	ND	5.0					
trans-1,3-Dichloropropene	ND	5.0					
Trichloroethene	ND	5.0					
Trichlorofluoromethane	ND	5.0					
Vinyl chloride	ND	2.0					
Xylenes, Total	ND	5.0					
Surr: 4-Bromofluorobenzene	47.49	0	*50*	0	*95*	*61-131*	0
Surr: Dibromofluoromethane	50.03	0	*50*	0	*100*	*87-126*	0
Surr: Toluene-d8	50.15	0	*50*	0	*100*	*84-111*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech EM Inc.
Work Order: 1303380
Project: Mullins

QC BATCH REPORT

Batch ID: **R97833** Instrument ID: **VMS1** Method: **SW8260**

LCS Sample ID: **LCS-R97833** Units: **µg/L** Analysis Date: **3/21/2013 09:03 AM**
Client ID: Run ID: **VMS1_130321A** SeqNo: **581372** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	52.48	5.0	50	0	105	48.4-140	0			
1,1-Dichloroethene	42.82	5.0	50	0	85.6	45.5-150	0			
1,2-Dichloroethane	53.04	5.0	50	0	106	46.5-141	0			
1,3-Dichlorobenzene	48.49	5.0	50	0	97	42.5-133	0			
1,4-Dichlorobenzene	47.16	5.0	50	0	94.3	38.9-136	0			
Benzene	41.52	5.0	50	0	83	50.7-134	0			
Carbon tetrachloride	52.08	5.0	50	0	104	45.5-143	0			
Chlorobenzene	44.66	5.0	50	0	89.3	45-133	0			
Chloroform	46.67	5.0	50	0	93.3	52.4-136	0			
cis-1,2-Dichloroethene	45.12	5.0	50	0	90.2	49.7-138	0			
Ethylbenzene	45.29	5.0	50	0	90.6	37.8-145	0			
m,p-Xylene	93.91	5.0	100	0	93.9	25.1-163	0			
Styrene	48.75	5.0	50	0	97.5	26.3-172	0			
Tetrachloroethene	48.75	5.0	50	0	97.5	37.3-139	0			
Toluene	44.53	5.0	50	0	89.1	44-135	0			
Trichloroethene	48.12	5.0	50	0	96.2	46.9-134	0			
Surr: 4-Bromofluorobenzene	52.04	0	*50*	0	*104*	*61-131*	0			
Surr: Dibromofluoromethane	51.63	0	*50*	0	*103*	*87-126*	0			
Surr: Toluene-d8	51.09	0	*50*	0	*102*	*84-111*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech EM Inc.
Work Order: 1303380
Project: Mullins

QC BATCH REPORT

Batch ID: **R97833** Instrument ID: **VMS1** Method: **SW8260**

MS Sample ID: **1303292-03B MS** Units: **µg/L** Analysis Date: **3/21/2013 10:02 AM**
Client ID: Run ID: **VMS1_130321A** SeqNo: **581375** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	51.69	5.0	50	0	103	47.4-141	0			
1,1-Dichloroethene	43.79	5.0	50	0	87.6	56.3-140	0			
1,2-Dichloroethane	51.33	5.0	50	0	103	50.1-139	0			
1,3-Dichlorobenzene	51.27	5.0	50	0	103	53-127	0			
1,4-Dichlorobenzene	47.75	5.0	50	0	95.5	53.4-129	0			
Benzene	42.25	5.0	50	0	84.5	52.8-136	0			
Carbon tetrachloride	52.44	5.0	50	0	105	48.1-141	0			
Chlorobenzene	46.65	5.0	50	0	93.3	52.4-132	0			
Chloroform	48.22	5.0	50	0	96.4	52.9-136	0			
cis-1,2-Dichloroethene	46.39	5.0	50	0	92.8	63.5-128	0			
Ethylbenzene	47.51	5.0	50	0	95	46.5-146	0			
m,p-Xylene	97.15	5.0	100	0	97.2	38.2-167	0			
Styrene	44.78	5.0	50	0	89.6	20.9-184	0			
Tetrachloroethene	50.33	5.0	50	0	101	55.2-134	0			
Toluene	45.65	5.0	50	0	91.3	45.1-138	0			
Trichloroethene	48.96	5.0	50	0	97.9	52.8-133	0			
Surr: 4-Bromofluorobenzene	50.77	0	*50*	0	*102*	*61-131*	0			
Surr: Dibromofluoromethane	52.04	0	*50*	0	*104*	*87-126*	0			
Surr: Toluene-d8	51.01	0	*50*	0	*102*	*84-111*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech EM Inc.
Work Order: 1303380
Project: Mullins

QC BATCH REPORT

Batch ID: **R97833** Instrument ID: **VMS1** Method: **SW8260**

MSD Sample ID: **1303292-03B MSD** Units: **µg/L** Analysis Date: **3/21/2013 10:32 AM**
Client ID: Run ID: **VMS1_130321A** SeqNo: **581377** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	49.63	5.0	50	0	99.3	47.4-141	51.69	4.07	20	
1,1-Dichloroethene	41.13	5.0	50	0	82.3	56.3-140	43.79	6.26	20	
1,2-Dichloroethane	50.21	5.0	50	0	100	50.1-139	51.33	2.21	20	
1,3-Dichlorobenzene	46.27	5.0	50	0	92.5	53-127	51.27	10.3	20	
1,4-Dichlorobenzene	44.16	5.0	50	0	88.3	53.4-129	47.75	7.81	20	
Benzene	39.77	5.0	50	0	79.5	52.8-136	42.25	6.05	20	
Carbon tetrachloride	49.83	5.0	50	0	99.7	48.1-141	52.44	5.1	20	
Chlorobenzene	44.43	5.0	50	0	88.9	52.4-132	46.65	4.87	20	
Chloroform	46.04	5.0	50	0	92.1	52.9-136	48.22	4.63	20	
cis-1,2-Dichloroethene	44.34	5.0	50	0	88.7	63.5-128	46.39	4.52	20	
Ethylbenzene	44.35	5.0	50	0	88.7	46.5-146	47.51	6.88	20	
m,p-Xylene	90.99	5.0	100	0	91	38.2-167	97.15	6.55	20	
Styrene	42.28	5.0	50	0	84.6	20.9-184	44.78	5.74	20	
Tetrachloroethene	47.06	5.0	50	0	94.1	55.2-134	50.33	6.72	20	
Toluene	42.65	5.0	50	0	85.3	45.1-138	45.65	6.8	20	
Trichloroethene	45.54	5.0	50	0	91.1	52.8-133	48.96	7.24	20	
Surr: 4-Bromofluorobenzene	51.02	0	*50*	0	*102*	*61-131*	50.77	*0.491*		
Surr: Dibromofluoromethane	51.54	0	*50*	0	*103*	*87-126*	52.04	*0.965*		
Surr: Toluene-d8	49.22	0	*50*	0	*98.4*	*84-111*	51.01	*3.57*		

The following samples were analyzed in this batch: 1303380-01A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Environmental

Date: 21-Mar-13

Client: Tetra Tech EM Inc.
Project: Mullins
WorkOrder: **1303380**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
E	EPA Method
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SDL	Sample Detection Limit
SW	SW-846 Method

Units Reported	Description
µg/L	

ALS Environmental

Sample Receipt Checklist

Client Name: **TETRATECH-CINCINNATI** Date/Time Received: **20-Mar-13 19:51**

Work Order: **1303380** Received by: **SLW**

Checklist completed by: Jan Wilcox 21-Mar-13 Reviewed by: Chris Gibson 21-Mar-13
eSignature Date eSignature Date

Matrices:
Carrier name: Client

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.1		
Cooler(s)/Kit(s):			
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☐	N/A ☐
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

Field Chain-of-Custody Record

1303411

☐ REGULAR Status ☒ RUSH Status 24hr

Page ____ of ____

Cooler Temp: 2.9 (Lab only)

11325

Date 3-21 Purchase Order No. ____ Billing Address (if different) ____

Company Name Tetra Tech

Address 250 W Court #200 W

Cincinnati (City) Oh (State) 45202 (Zip)

Person to Contact Vicky Farmer Project No. ____

Email Address Vicky.Farmer@tetratech.com Sampling Site ____

Telephone (513) 333 3666 Date/Time of Collection ____

Fax Telephone ( ) ____ VAP ☐ Yes ☐ No

Sample Number	Site ID	Date	Time	Lab Sample Number	Preservation	Sample Type	Analysis Requested: VOC									No. of Containers
01	GW7-41-52	3-21-13	1802		HCl	WAG	X									
02	GW7-32-37	↓	1830		1	1	1									

Notes:

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*.

Relinquished by: (Signature)	Time / Date	Received by: (Signature)	Time / Date
[signature]	2010/3-21	[signature]	3/21/13@2010
Relinquished by: (Signature)	Time / Date	Received by: (Signature)	Time / Date
Relinquished by: (Signature)	Time / Date	Received by: (Signature)	Time / Date

Ship to: **ALS Environmental**
4388 Glendale - Milford Road
Cincinnati, Ohio 45242
Phone: 513.733.5336
Fax: 513.733.5347

Carrier / Airbill #

Date / Time:

22-Mar-2013

Vicky Farmer
Tetra Tech EM Inc.
250 W. Court St., Suite 200W
Cincinnati, OH 45202

Tel: (513) 333-3666
Fax: (513) 241-0354

Re: Mullins Work Order: **1303411**

Dear Vicky,

ALS Environmental received 2 samples on 21-Mar-2013 for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 14.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Chris Gibson

Electronically approved by: Chris Gibson

Chris Gibson
Project Manager

ALS Environmental

Date: 22-Mar-13

Client: Tetra Tech EM Inc.
Project: Mullins
Work Order: **1303411**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1303411-01	GW7-47-52	Water		3/21/2013 18:02	3/21/2013	☐
1303411-02	GW7-32-37	Water		3/21/2013 18:30	3/21/2013	☐

ALS Environmental

Date: 22-Mar-13

Client: Tetra Tech EM Inc.
Project: Mullins
Work Order: 1303411

Case Narrative

The analytical data provided relates directly to the samples received by ALS Laboratory Group and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

ALS Environmental

Date: *22-Mar-13*

Client: Tetra Tech EM Inc.
Project: Mullins
Sample ID: GW7-47-52
Collection Date: 3/21/2013 06:02 PM

Work Order: 1303411
Lab ID: 1303411-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260**			Analyst: **LAK**
1,1,1,2-Tetrachloroethane	ND		5.0	µg/L	1	3/22/2013 12:52 PM
1,1,1-Trichloroethane	ND		5.0	µg/L	1	3/22/2013 12:52 PM
1,1,2,2-Tetrachloroethane	ND		5.0	µg/L	1	3/22/2013 12:52 PM
1,1,2-Trichloroethane	ND		5.0	µg/L	1	3/22/2013 12:52 PM
1,1-Dichloroethane	ND		5.0	µg/L	1	3/22/2013 12:52 PM
1,1-Dichloroethene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
1,1-Dichloropropene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
1,2,3-Trichlorobenzene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
1,2,3-Trichloropropane	ND		5.0	µg/L	1	3/22/2013 12:52 PM
1,2,4-Trichlorobenzene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
1,2,4-Trimethylbenzene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
1,2-Dibromo-3-chloropropane	ND		5.0	µg/L	1	3/22/2013 12:52 PM
1,2-Dibromoethane	ND		5.0	µg/L	1	3/22/2013 12:52 PM
1,2-Dichlorobenzene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
1,2-Dichloroethane	ND		5.0	µg/L	1	3/22/2013 12:52 PM
1,2-Dichloropropane	ND		5.0	µg/L	1	3/22/2013 12:52 PM
1,3,5-Trimethylbenzene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
1,3-Dichlorobenzene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
1,3-Dichloropropane	ND		5.0	µg/L	1	3/22/2013 12:52 PM
1,4-Dichlorobenzene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
2,2-Dichloropropane	ND		5.0	µg/L	1	3/22/2013 12:52 PM
2-Butanone	ND		5.0	µg/L	1	3/22/2013 12:52 PM
2-Chlorotoluene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
2-Hexanone	ND		5.0	µg/L	1	3/22/2013 12:52 PM
4-Chlorotoluene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
4-Methyl-2-pentanone	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Acetone	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Benzene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Bromobenzene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Bromochloromethane	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Bromodichloromethane	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Bromoform	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Bromomethane	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Carbon disulfide	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Carbon tetrachloride	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Chlorobenzene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Chloroethane	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Chloroform	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Chloromethane	ND		5.0	µg/L	1	3/22/2013 12:52 PM

Note:

ALS Environmental

Date: *22-Mar-13*

Client: Tetra Tech EM Inc.
Project: Mullins
Work Order: 1303411
Sample ID: GW7-47-52
Lab ID: 1303411-01
Collection Date: 3/21/2013 06:02 PM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
cis-1,2-Dichloroethene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
cis-1,3-Dichloropropene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Dibromochloromethane	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Dibromomethane	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Dichlorodifluoromethane	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Ethylbenzene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Hexachlorobutadiene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Isopropylbenzene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
m,p-Xylene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Methyl tert-butyl ether	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Methylene chloride	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Naphthalene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
n-Butylbenzene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
n-Propylbenzene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
o-Xylene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
p-Isopropyltoluene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
sec-Butylbenzene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Styrene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
tert-Butylbenzene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Tetrachloroethene	**27**		**5.0**	**µg/L**	1	3/22/2013 12:52 PM
Toluene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
trans-1,2-Dichloroethene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
trans-1,3-Dichloropropene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Trichloroethene	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Trichlorofluoromethane	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Vinyl chloride	ND		2.0	µg/L	1	3/22/2013 12:52 PM
Xylenes, Total	ND		5.0	µg/L	1	3/22/2013 12:52 PM
Surr: 4-Bromofluorobenzene	*99.1*		*61-131*	*%REC*	1	3/22/2013 12:52 PM
Surr: Dibromofluoromethane	*98.9*		*87-126*	*%REC*	1	3/22/2013 12:52 PM
Surr: Toluene-d8	*98.4*		*84-111*	*%REC*	1	3/22/2013 12:52 PM

Note:

ALS Environmental

Date: *22-Mar-13*

Client: Tetra Tech EM Inc.
Project: Mullins
Sample ID: GW7-32-37
Collection Date: 3/21/2013 06:30 PM

Work Order: 1303411
Lab ID: 1303411-02
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260**			Analyst: **LAK**
1,1,1,2-Tetrachloroethane	ND		5.0	µg/L	1	3/22/2013 01:24 PM
1,1,1-Trichloroethane	ND		5.0	µg/L	1	3/22/2013 01:24 PM
1,1,2,2-Tetrachloroethane	ND		5.0	µg/L	1	3/22/2013 01:24 PM
1,1,2-Trichloroethane	ND		5.0	µg/L	1	3/22/2013 01:24 PM
1,1-Dichloroethane	ND		5.0	µg/L	1	3/22/2013 01:24 PM
1,1-Dichloroethene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
1,1-Dichloropropene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
1,2,3-Trichlorobenzene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
1,2,3-Trichloropropane	ND		5.0	µg/L	1	3/22/2013 01:24 PM
1,2,4-Trichlorobenzene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
1,2,4-Trimethylbenzene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
1,2-Dibromo-3-chloropropane	ND		5.0	µg/L	1	3/22/2013 01:24 PM
1,2-Dibromoethane	ND		5.0	µg/L	1	3/22/2013 01:24 PM
1,2-Dichlorobenzene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
1,2-Dichloroethane	ND		5.0	µg/L	1	3/22/2013 01:24 PM
1,2-Dichloropropane	ND		5.0	µg/L	1	3/22/2013 01:24 PM
1,3,5-Trimethylbenzene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
1,3-Dichlorobenzene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
1,3-Dichloropropane	ND		5.0	µg/L	1	3/22/2013 01:24 PM
1,4-Dichlorobenzene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
2,2-Dichloropropane	ND		5.0	µg/L	1	3/22/2013 01:24 PM
2-Butanone	ND		5.0	µg/L	1	3/22/2013 01:24 PM
2-Chlorotoluene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
2-Hexanone	ND		5.0	µg/L	1	3/22/2013 01:24 PM
4-Chlorotoluene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
4-Methyl-2-pentanone	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Acetone	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Benzene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Bromobenzene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Bromochloromethane	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Bromodichloromethane	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Bromoform	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Bromomethane	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Carbon disulfide	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Carbon tetrachloride	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Chlorobenzene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Chloroethane	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Chloroform	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Chloromethane	ND		5.0	µg/L	1	3/22/2013 01:24 PM

Note:

ALS Environmental

Date: *22-Mar-13*

Client: Tetra Tech EM Inc.
Project: Mullins
Sample ID: GW7-32-37
Collection Date: 3/21/2013 06:30 PM

Work Order: 1303411
Lab ID: 1303411-02
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
cis-1,2-Dichloroethene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
cis-1,3-Dichloropropene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Dibromochloromethane	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Dibromomethane	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Dichlorodifluoromethane	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Ethylbenzene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Hexachlorobutadiene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Isopropylbenzene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
m,p-Xylene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Methyl tert-butyl ether	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Methylene chloride	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Naphthalene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
n-Butylbenzene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
n-Propylbenzene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
o-Xylene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
p-Isopropyltoluene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
sec-Butylbenzene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Styrene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
tert-Butylbenzene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Tetrachloroethene	**86**		**5.0**	**µg/L**	1	3/22/2013 01:24 PM
Toluene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
trans-1,2-Dichloroethene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
trans-1,3-Dichloropropene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Trichloroethene	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Trichlorofluoromethane	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Vinyl chloride	ND		2.0	µg/L	1	3/22/2013 01:24 PM
Xylenes, Total	ND		5.0	µg/L	1	3/22/2013 01:24 PM
Surr: 4-Bromofluorobenzene	*101*		*61-131*	*%REC*	1	3/22/2013 01:24 PM
Surr: Dibromofluoromethane	*96.7*		*87-126*	*%REC*	1	3/22/2013 01:24 PM
Surr: Toluene-d8	*99.7*		*84-111*	*%REC*	1	3/22/2013 01:24 PM

Note:

Batch ID: **R97863** Instrument ID: **VMS2** Method: **SW8260**

MBLK Sample ID: **MBLK-R97863** Units: **µg/L** Analysis Date: **3/22/2013 10:28 AM**

Client ID: Run ID: **VMS2_130322A** SeqNo: **582470** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	5.0								
1,1,1-Trichloroethane	ND	5.0								
1,1,2,2-Tetrachloroethane	ND	5.0								
1,1,2-Trichloroethane	ND	5.0								
1,1-Dichloroethane	ND	5.0								
1,1-Dichloroethene	ND	5.0								
1,1-Dichloropropene	ND	5.0								
1,2,3-Trichlorobenzene	ND	5.0								
1,2,3-Trichloropropane	ND	5.0								
1,2,4-Trichlorobenzene	ND	5.0								
1,2,4-Trimethylbenzene	ND	5.0								
1,2-Dibromo-3-chloropropane	ND	5.0								
1,2-Dibromoethane	ND	5.0								
1,2-Dichlorobenzene	ND	5.0								
1,2-Dichloroethane	ND	5.0								
1,2-Dichloropropane	ND	5.0								
1,3,5-Trimethylbenzene	ND	5.0								
1,3-Dichlorobenzene	ND	5.0								
1,3-Dichloropropane	ND	5.0								
1,4-Dichlorobenzene	ND	5.0								
2,2-Dichloropropane	ND	5.0								
2-Butanone	ND	5.0								
2-Chlorotoluene	ND	5.0								
2-Hexanone	ND	5.0								
4-Chlorotoluene	ND	5.0								
4-Methyl-2-pentanone	ND	5.0								
Acetone	ND	5.0								
Benzene	ND	5.0								
Bromobenzene	ND	5.0								
Bromochloromethane	ND	5.0								
Bromodichloromethane	ND	5.0								
Bromoform	ND	5.0								
Bromomethane	ND	5.0								
Carbon disulfide	ND	5.0								
Carbon tetrachloride	ND	5.0								
Chlorobenzene	ND	5.0								
Chloroethane	ND	5.0								
Chloroform	ND	5.0								
Chloromethane	ND	5.0								
cis-1,2-Dichloroethene	ND	5.0								
cis-1,3-Dichloropropene	ND	5.0								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Batch ID: **R97863** Instrument ID: **VMS2** Method: **SW8260**

Dibromochloromethane	ND	5.0					
Dibromomethane	ND	5.0					
Dichlorodifluoromethane	ND	5.0					
Ethylbenzene	ND	5.0					
Hexachlorobutadiene	ND	5.0					
Isopropylbenzene	ND	5.0					
m,p-Xylene	ND	5.0					
Methyl tert-butyl ether	ND	5.0					
Methylene chloride	ND	5.0					
Naphthalene	ND	5.0					
n-Butylbenzene	ND	5.0					
n-Propylbenzene	ND	5.0					
o-Xylene	ND	5.0					
p-Isopropyltoluene	ND	5.0					
sec-Butylbenzene	ND	5.0					
Styrene	ND	5.0					
tert-Butylbenzene	ND	5.0					
Tetrachloroethene	ND	5.0					
Toluene	ND	5.0					
trans-1,2-Dichloroethene	ND	5.0					
trans-1,3-Dichloropropene	ND	5.0					
Trichloroethene	ND	5.0					
Trichlorofluoromethane	ND	5.0					
Vinyl chloride	ND	2.0					
Xylenes, Total	ND	5.0					
Surr: 4-Bromofluorobenzene	51.76	0	*50*	0	*104*	*61-131*	0
Surr: Dibromofluoromethane	48.77	0	*50*	0	*97.5*	*87-126*	0
Surr: Toluene-d8	51.11	0	*50*	0	*102*	*84-111*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech EM Inc.
Work Order: 1303411
Project: Mullins

QC BATCH REPORT

Batch ID: **R97863** Instrument ID: **VMS2** Method: **SW8260**

LCS Sample ID: **LCS-R97863** Units: **µg/L** Analysis Date: **3/22/2013 11:00 AM**
Client ID: Run ID: **VMS2_130322A** SeqNo: **582471** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	46.92	5.0	50	0	93.8	48.4-140	0			
1,1-Dichloroethene	44.23	5.0	50	0	88.5	45.5-150	0			
1,2-Dichloroethane	46.05	5.0	50	0	92.1	46.5-141	0			
1,3-Dichlorobenzene	45.2	5.0	50	0	90.4	42.5-133	0			
1,4-Dichlorobenzene	44.21	5.0	50	0	88.4	38.9-136	0			
Benzene	45.8	5.0	50	0	91.6	50.7-134	0			
Carbon tetrachloride	46.58	5.0	50	0	93.2	45.5-143	0			
Chlorobenzene	46.17	5.0	50	0	92.3	45-133	0			
Chloroform	47.46	5.0	50	0	94.9	52.4-136	0			
cis-1,2-Dichloroethene	46.37	5.0	50	0	92.7	49.7-138	0			
Ethylbenzene	47.43	5.0	50	0	94.9	37.8-145	0			
m,p-Xylene	95.12	5.0	100	0	95.1	25.1-163	0			
Styrene	47.81	5.0	50	0	95.6	26.3-172	0			
Tetrachloroethene	47.88	5.0	50	0	95.8	37.3-139	0			
Toluene	45.93	5.0	50	0	91.9	44-135	0			
Trichloroethene	45.1	5.0	50	0	90.2	46.9-134	0			
Surr: 4-Bromofluorobenzene	48.43	0	*50*	0	*96.9*	*61-131*	0			
Surr: Dibromofluoromethane	51.6	0	*50*	0	*103*	*87-126*	0			
Surr: Toluene-d8	48.78	0	*50*	0	*97.6*	*84-111*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech EM Inc.
Work Order: 1303411
Project: Mullins

QC BATCH REPORT

Batch ID: **R97863** Instrument ID: **VMS2** Method: **SW8260**

MS Sample ID: **1303292-05B MS** Units: **µg/L** Analysis Date: **3/22/2013 11:48 AM**
Client ID: Run ID: **VMS2_130322A** SeqNo: **582472** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	49.5	5.0	50	0	99	47.4-141	0			
1,1-Dichloroethene	44.73	5.0	50	0	89.5	56.3-140	0			
1,2-Dichloroethane	45.38	5.0	50	0	90.8	50.1-139	0			
1,3-Dichlorobenzene	48.45	5.0	50	0	96.9	53-127	0			
1,4-Dichlorobenzene	46.63	5.0	50	0	93.3	53.4-129	0			
Benzene	46.06	5.0	50	0	92.1	52.8-136	0			
Carbon tetrachloride	48.41	5.0	50	0	96.8	48.1-141	0			
Chlorobenzene	46.88	5.0	50	0	93.8	52.4-132	0			
Chloroform	47.35	5.0	50	0	94.7	52.9-136	0			
cis-1,2-Dichloroethene	46.26	5.0	50	0	92.5	63.5-128	0			
Ethylbenzene	48.12	5.0	50	0	96.2	46.5-146	0			
m,p-Xylene	94.9	5.0	100	0	94.9	38.2-167	0			
Styrene	47.67	5.0	50	0	95.3	20.9-184	0			
Tetrachloroethene	49.78	5.0	50	0	99.6	55.2-134	0			
Toluene	46.42	5.0	50	0	92.8	45.1-138	0			
Trichloroethene	47.64	5.0	50	0	95.3	52.8-133	0			
Surr: 4-Bromofluorobenzene	50.31	0	*50*	0	*101*	*61-131*	0			
Surr: Dibromofluoromethane	51.22	0	*50*	0	*102*	*87-126*	0			
Surr: Toluene-d8	49.53	0	*50*	0	*99.1*	*84-111*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech EM Inc.
Work Order: 1303411
Project: Mullins

QC BATCH REPORT

Batch ID: **R97863** Instrument ID: **VMS2** Method: **SW8260**

MSD Sample ID: **1303292-05B MSD** Units: **µg/L** Analysis Date: **3/22/2013 01:56 PM**
Client ID: Run ID: **VMS2_130322A** SeqNo: **582476** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	54	5.0	50	0	108	47.4-141	49.5	8.7	20	
1,1-Dichloroethene	47.65	5.0	50	0	95.3	56.3-140	44.73	6.32	20	
1,2-Dichloroethane	50.77	5.0	50	0	102	50.1-139	45.38	11.2	20	
1,3-Dichlorobenzene	52.92	5.0	50	0	106	53-127	48.45	8.82	20	
1,4-Dichlorobenzene	51.3	5.0	50	0	103	53.4-129	46.63	9.54	20	
Benzene	51.27	5.0	50	0	103	52.8-136	46.06	10.7	20	
Carbon tetrachloride	53.38	5.0	50	0	107	48.1-141	48.41	9.77	20	
Chlorobenzene	52.43	5.0	50	0	105	52.4-132	46.88	11.2	20	
Chloroform	51.46	5.0	50	0	103	52.9-136	47.35	8.32	20	
cis-1,2-Dichloroethene	50.55	5.0	50	0	101	63.5-128	46.26	8.86	20	
Ethylbenzene	53.62	5.0	50	0	107	46.5-146	48.12	10.8	20	
m,p-Xylene	107.8	5.0	100	0	108	38.2-167	94.9	12.8	20	
Styrene	54.74	5.0	50	0	109	20.9-184	47.67	13.8	20	
Tetrachloroethene	55.4	5.0	50	0	111	55.2-134	49.78	10.7	20	
Toluene	53.23	5.0	50	0	106	45.1-138	46.42	13.7	20	
Trichloroethene	52.86	5.0	50	0	106	52.8-133	47.64	10.4	20	
Surr: 4-Bromofluorobenzene	49.31	0	*50*	0	*98.6*	*61-131*	50.31	*2.01*		
Surr: Dibromofluoromethane	49.21	0	*50*	0	*98.4*	*87-126*	51.22	*4*		
Surr: Toluene-d8	50.24	0	*50*	0	*100*	*84-111*	49.53	*1.42*		

The following samples were analyzed in this batch: 1303411-01A 1303411-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Environmental

Date: 22-Mar-13

Client: Tetra Tech EM Inc.
Project: Mullins
WorkOrder: **1303411**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
E	EPA Method
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SDL	Sample Detection Limit
SW	SW-846 Method

Units Reported	Description
µg/L	

ALS Environmental

Sample Receipt Checklist

Client Name: **TETRATECH-CINCINNATI** Date/Time Received: **21-Mar-13 00:00**

Work Order: **1303411** Received by: **SLW**

Checklist completed by: Ann Gallagher 22-Mar-13 Reviewed by:
eSignature Date eSignature Date

Matrices:
Carrier name: Client

Shipping container/cooler in good condition?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	2.9	C	
Cooler(s)/Kit(s):			
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

A4

Field Chain-of-Custody Record

Page 1 of 1

11324

☐ REGULAR Status ☒ RUSH Status

Cooler Temp: 5.0 (Lab only)

1303548

24 hr

Date 3-28 Purchase Order No. 1093403

Billing Address (if different)

Company Name Tetra Tech

Address 250 W Court #200W

Cincinnati (City) Oh (State) 45202 (Zip)

Person to Contact Vicky Farmer

Email Address Vicky.Farmer@tetratech.com

Telephone (513) 348 2080

Fax Telephone ( )

Project No.

Sampling Site Mullins

Date/Time of Collection

VAP ☐ Yes ☒ No

Sample Number	Site ID	Date	Time	Lab Sample Number	Preservation	Sample Type	Analysis Requested: VOC	No. of Containers
	GW14-47.5-51.5	3-28-13	1047	-01	ICE	Water	X	2
	GW14-32-36		1111	02	↓	↓	↓	2
	Purge Water Drum		1615	03	HCl	↓	↓	3

Notes:

Failure to complete all portions of this form may delay analysis. Please fill in this form *LEGIBLY*.

Relinquished by: (Signature)	Time / Date	Received by: (Signature)	Time / Date
	3-28-1902		3/28/13 19:02
Relinquished by: (Signature)	Time / Date	Received by: (Signature)	Time / Date
Relinquished by: (Signature)	Time / Date	Received by: (Signature)	Time / Date

Ship to: **ALS Environmental**
4388 Glendale - Milford Road
Cincinnati, Ohio 45242
Phone: 513.733.5336
Fax: 513.733.5347

Carrier / Airbill #

Date / Time:

29-Mar-2013

Vicky Farmer
Tetra Tech EM Inc.
250 W. Court St., Suite 200W
Cincinnati, OH 45202

Tel: (513) 333-3666
Fax: (513) 241-0354

Re: Mullins Work Order: **1303548**

Dear Vicky,

ALS Environmental received 3 samples on 28-Mar-2013 07:02 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 16.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Chris Gibson

Electronically approved by: Rob Nieman

Chris Gibson
Project Manager

ALS Environmental

Date: 29-Mar-13

Client: Tetra Tech EM Inc.
Project: Mullins
Work Order: **1303548**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1303548-01	GW14-47.5-51.5	Water		3/28/2013 10:47	3/28/2013 19:02	☐
1303548-02	GW14-32-36	Water		3/28/2013 11:11	3/28/2013 19:02	☐
1303548-03	Purge Water Drum	Water		3/28/2013 16:15	3/28/2013 19:02	☐

ALS Environmental

Date: 29-Mar-13

Client: Tetra Tech EM Inc.
Project: Mullins
Work Order: 1303548

Case Narrative

The analytical data provided relates directly to the samples received by ALS Laboratory Group and for only the analyses requested.

QC sample results for this data met laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Laboratory Group. Samples will be disposed in 30 days unless storage arrangements are made.

ALS Environmental

Date: *29-Mar-13*

Client: Tetra Tech EM Inc.
Project: Mullins
Sample ID: GW14-47.5-51.5
Collection Date: 3/28/2013 10:47 AM

Work Order: 1303548
Lab ID: 1303548-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260**			Analyst: **LAK**
1,1,1,2-Tetrachloroethane	ND		5.0	µg/L	1	3/29/2013 09:53 AM
1,1,1-Trichloroethane	ND		5.0	µg/L	1	3/29/2013 09:53 AM
1,1,2,2-Tetrachloroethane	ND		5.0	µg/L	1	3/29/2013 09:53 AM
1,1,2-Trichloroethane	ND		5.0	µg/L	1	3/29/2013 09:53 AM
1,1-Dichloroethane	ND		5.0	µg/L	1	3/29/2013 09:53 AM
1,1-Dichloroethene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
1,1-Dichloropropene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
1,2,3-Trichlorobenzene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
1,2,3-Trichloropropane	ND		5.0	µg/L	1	3/29/2013 09:53 AM
1,2,4-Trichlorobenzene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
1,2,4-Trimethylbenzene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
1,2-Dibromo-3-chloropropane	ND		5.0	µg/L	1	3/29/2013 09:53 AM
1,2-Dibromoethane	ND		5.0	µg/L	1	3/29/2013 09:53 AM
1,2-Dichlorobenzene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
1,2-Dichloroethane	ND		5.0	µg/L	1	3/29/2013 09:53 AM
1,2-Dichloropropane	ND		5.0	µg/L	1	3/29/2013 09:53 AM
1,3,5-Trimethylbenzene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
1,3-Dichlorobenzene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
1,3-Dichloropropane	ND		5.0	µg/L	1	3/29/2013 09:53 AM
1,4-Dichlorobenzene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
2,2-Dichloropropane	ND		5.0	µg/L	1	3/29/2013 09:53 AM
2-Butanone	ND		5.0	µg/L	1	3/29/2013 09:53 AM
2-Chlorotoluene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
2-Hexanone	ND		5.0	µg/L	1	3/29/2013 09:53 AM
4-Chlorotoluene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
4-Methyl-2-pentanone	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Acetone	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Benzene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Bromobenzene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Bromochloromethane	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Bromodichloromethane	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Bromoform	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Bromomethane	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Carbon disulfide	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Carbon tetrachloride	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Chlorobenzene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Chloroethane	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Chloroform	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Chloromethane	ND		5.0	µg/L	1	3/29/2013 09:53 AM

Note:

ALS Environmental

Date: *29-Mar-13*

Client: Tetra Tech EM Inc.
Project: Mullins
Sample ID: GW14-47.5-51.5
Collection Date: 3/28/2013 10:47 AM

Work Order: 1303548
Lab ID: 1303548-01
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
cis-1,2-Dichloroethene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
cis-1,3-Dichloropropene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Dibromochloromethane	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Dibromomethane	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Dichlorodifluoromethane	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Ethylbenzene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Hexachlorobutadiene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Isopropylbenzene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
m,p-Xylene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Methyl tert-butyl ether	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Methylene chloride	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Naphthalene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
n-Butylbenzene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
n-Propylbenzene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
o-Xylene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
p-Isopropyltoluene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
sec-Butylbenzene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Styrene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
tert-Butylbenzene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Tetrachloroethene	**5,500**		**500**	**µg/L**	100	3/29/2013 10:24 AM
Toluene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
trans-1,2-Dichloroethene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
trans-1,3-Dichloropropene	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Trichloroethene	**15**		**5.0**	**µg/L**	1	3/29/2013 09:53 AM
Trichlorofluoromethane	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Vinyl chloride	ND		2.0	µg/L	1	3/29/2013 09:53 AM
Xylenes, Total	ND		5.0	µg/L	1	3/29/2013 09:53 AM
Surr: 4-Bromofluorobenzene	*86.4*		*61-131*	*%REC*	1	3/29/2013 09:53 AM
Surr: Dibromofluoromethane	*102*		*87-126*	*%REC*	1	3/29/2013 09:53 AM
Surr: Toluene-d8	*101*		*84-111*	*%REC*	1	3/29/2013 09:53 AM

Note:

ALS Environmental

Date: *29-Mar-13*

Client: Tetra Tech EM Inc.
Project: Mullins
Sample ID: GW14-32-36
Collection Date: 3/28/2013 11:11 AM

Work Order: 1303548
Lab ID: 1303548-02
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260**			Analyst: **LAK**
1,1,1,2-Tetrachloroethane	ND		25	µg/L	5	3/29/2013 10:53 AM
1,1,1-Trichloroethane	ND		25	µg/L	5	3/29/2013 10:53 AM
1,1,2,2-Tetrachloroethane	ND		25	µg/L	5	3/29/2013 10:53 AM
1,1,2-Trichloroethane	ND		25	µg/L	5	3/29/2013 10:53 AM
1,1-Dichloroethane	ND		25	µg/L	5	3/29/2013 10:53 AM
1,1-Dichloroethene	ND		25	µg/L	5	3/29/2013 10:53 AM
1,1-Dichloropropene	ND		25	µg/L	5	3/29/2013 10:53 AM
1,2,3-Trichlorobenzene	ND		25	µg/L	5	3/29/2013 10:53 AM
1,2,3-Trichloropropane	ND		25	µg/L	5	3/29/2013 10:53 AM
1,2,4-Trichlorobenzene	ND		25	µg/L	5	3/29/2013 10:53 AM
1,2,4-Trimethylbenzene	ND		25	µg/L	5	3/29/2013 10:53 AM
1,2-Dibromo-3-chloropropane	ND		25	µg/L	5	3/29/2013 10:53 AM
1,2-Dibromoethane	ND		25	µg/L	5	3/29/2013 10:53 AM
1,2-Dichlorobenzene	ND		25	µg/L	5	3/29/2013 10:53 AM
1,2-Dichloroethane	ND		25	µg/L	5	3/29/2013 10:53 AM
1,2-Dichloropropane	ND		25	µg/L	5	3/29/2013 10:53 AM
1,3,5-Trimethylbenzene	ND		25	µg/L	5	3/29/2013 10:53 AM
1,3-Dichlorobenzene	ND		25	µg/L	5	3/29/2013 10:53 AM
1,3-Dichloropropane	ND		25	µg/L	5	3/29/2013 10:53 AM
1,4-Dichlorobenzene	ND		25	µg/L	5	3/29/2013 10:53 AM
2,2-Dichloropropane	ND		25	µg/L	5	3/29/2013 10:53 AM
2-Butanone	ND		25	µg/L	5	3/29/2013 10:53 AM
2-Chlorotoluene	ND		25	µg/L	5	3/29/2013 10:53 AM
2-Hexanone	ND		25	µg/L	5	3/29/2013 10:53 AM
4-Chlorotoluene	ND		25	µg/L	5	3/29/2013 10:53 AM
4-Methyl-2-pentanone	ND		25	µg/L	5	3/29/2013 10:53 AM
Acetone	ND		25	µg/L	5	3/29/2013 10:53 AM
Benzene	ND		25	µg/L	5	3/29/2013 10:53 AM
Bromobenzene	ND		25	µg/L	5	3/29/2013 10:53 AM
Bromochloromethane	ND		25	µg/L	5	3/29/2013 10:53 AM
Bromodichloromethane	ND		25	µg/L	5	3/29/2013 10:53 AM
Bromoform	ND		25	µg/L	5	3/29/2013 10:53 AM
Bromomethane	ND		25	µg/L	5	3/29/2013 10:53 AM
Carbon disulfide	ND		25	µg/L	5	3/29/2013 10:53 AM
Carbon tetrachloride	ND		25	µg/L	5	3/29/2013 10:53 AM
Chlorobenzene	ND		25	µg/L	5	3/29/2013 10:53 AM
Chloroethane	ND		25	µg/L	5	3/29/2013 10:53 AM
Chloroform	ND		25	µg/L	5	3/29/2013 10:53 AM
Chloromethane	ND		25	µg/L	5	3/29/2013 10:53 AM

Note:

ALS Environmental

Date: *29-Mar-13*

Client: Tetra Tech EM Inc.
Project: Mullins
Work Order: 1303548
Sample ID: GW14-32-36
Lab ID: 1303548-02
Collection Date: 3/28/2013 11:11 AM
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
cis-1,2-Dichloroethene	ND		25	µg/L	5	3/29/2013 10:53 AM
cis-1,3-Dichloropropene	ND		25	µg/L	5	3/29/2013 10:53 AM
Dibromochloromethane	ND		25	µg/L	5	3/29/2013 10:53 AM
Dibromomethane	ND		25	µg/L	5	3/29/2013 10:53 AM
Dichlorodifluoromethane	ND		25	µg/L	5	3/29/2013 10:53 AM
Ethylbenzene	ND		25	µg/L	5	3/29/2013 10:53 AM
Hexachlorobutadiene	ND		25	µg/L	5	3/29/2013 10:53 AM
Isopropylbenzene	ND		25	µg/L	5	3/29/2013 10:53 AM
m,p-Xylene	ND		25	µg/L	5	3/29/2013 10:53 AM
Methyl tert-butyl ether	ND		25	µg/L	5	3/29/2013 10:53 AM
Methylene chloride	ND		25	µg/L	5	3/29/2013 10:53 AM
Naphthalene	ND		25	µg/L	5	3/29/2013 10:53 AM
n-Butylbenzene	ND		25	µg/L	5	3/29/2013 10:53 AM
n-Propylbenzene	ND		25	µg/L	5	3/29/2013 10:53 AM
o-Xylene	ND		25	µg/L	5	3/29/2013 10:53 AM
p-Isopropyltoluene	ND		25	µg/L	5	3/29/2013 10:53 AM
sec-Butylbenzene	ND		25	µg/L	5	3/29/2013 10:53 AM
Styrene	ND		25	µg/L	5	3/29/2013 10:53 AM
tert-Butylbenzene	ND		25	µg/L	5	3/29/2013 10:53 AM
Tetrachloroethene	**14,000**		**500**	**µg/L**	100	3/29/2013 11:23 AM
Toluene	ND		25	µg/L	5	3/29/2013 10:53 AM
trans-1,2-Dichloroethene	ND		25	µg/L	5	3/29/2013 10:53 AM
trans-1,3-Dichloropropene	ND		25	µg/L	5	3/29/2013 10:53 AM
Trichloroethene	ND		25	µg/L	5	3/29/2013 10:53 AM
Trichlorofluoromethane	ND		25	µg/L	5	3/29/2013 10:53 AM
Vinyl chloride	ND		10	µg/L	5	3/29/2013 10:53 AM
Xylenes, Total	ND		25	µg/L	5	3/29/2013 10:53 AM
Surr: 4-Bromofluorobenzene	*89.6*		*61-131*	*%REC*	5	3/29/2013 10:53 AM
Surr: Dibromofluoromethane	*102*		*87-126*	*%REC*	5	3/29/2013 10:53 AM
Surr: Toluene-d8	*96.5*		*84-111*	*%REC*	5	3/29/2013 10:53 AM

Note:

ALS Environmental

Date: *29-Mar-13*

Client: Tetra Tech EM Inc.
Project: Mullins
Sample ID: Purge Water Drum
Collection Date: 3/28/2013 04:15 PM

Work Order: 1303548
Lab ID: 1303548-03
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
VOLATILE ORGANIC COMPOUNDS			**SW8260**			Analyst: **LAK**
1,1,1,2-Tetrachloroethane	ND		25	µg/L	5	3/29/2013 11:53 AM
1,1,1-Trichloroethane	ND		25	µg/L	5	3/29/2013 11:53 AM
1,1,2,2-Tetrachloroethane	ND		25	µg/L	5	3/29/2013 11:53 AM
1,1,2-Trichloroethane	ND		25	µg/L	5	3/29/2013 11:53 AM
1,1-Dichloroethane	ND		25	µg/L	5	3/29/2013 11:53 AM
1,1-Dichloroethene	ND		25	µg/L	5	3/29/2013 11:53 AM
1,1-Dichloropropene	ND		25	µg/L	5	3/29/2013 11:53 AM
1,2,3-Trichlorobenzene	ND		25	µg/L	5	3/29/2013 11:53 AM
1,2,3-Trichloropropane	ND		25	µg/L	5	3/29/2013 11:53 AM
1,2,4-Trichlorobenzene	ND		25	µg/L	5	3/29/2013 11:53 AM
1,2,4-Trimethylbenzene	ND		25	µg/L	5	3/29/2013 11:53 AM
1,2-Dibromo-3-chloropropane	ND		25	µg/L	5	3/29/2013 11:53 AM
1,2-Dibromoethane	ND		25	µg/L	5	3/29/2013 11:53 AM
1,2-Dichlorobenzene	ND		25	µg/L	5	3/29/2013 11:53 AM
1,2-Dichloroethane	ND		25	µg/L	5	3/29/2013 11:53 AM
1,2-Dichloropropane	ND		25	µg/L	5	3/29/2013 11:53 AM
1,3,5-Trimethylbenzene	ND		25	µg/L	5	3/29/2013 11:53 AM
1,3-Dichlorobenzene	ND		25	µg/L	5	3/29/2013 11:53 AM
1,3-Dichloropropane	ND		25	µg/L	5	3/29/2013 11:53 AM
1,4-Dichlorobenzene	ND		25	µg/L	5	3/29/2013 11:53 AM
2,2-Dichloropropane	ND		25	µg/L	5	3/29/2013 11:53 AM
2-Butanone	ND		25	µg/L	5	3/29/2013 11:53 AM
2-Chlorotoluene	ND		25	µg/L	5	3/29/2013 11:53 AM
2-Hexanone	ND		25	µg/L	5	3/29/2013 11:53 AM
4-Chlorotoluene	ND		25	µg/L	5	3/29/2013 11:53 AM
4-Methyl-2-pentanone	ND		25	µg/L	5	3/29/2013 11:53 AM
Acetone	ND		25	µg/L	5	3/29/2013 11:53 AM
Benzene	ND		25	µg/L	5	3/29/2013 11:53 AM
Bromobenzene	ND		25	µg/L	5	3/29/2013 11:53 AM
Bromochloromethane	ND		25	µg/L	5	3/29/2013 11:53 AM
Bromodichloromethane	ND		25	µg/L	5	3/29/2013 11:53 AM
Bromoform	ND		25	µg/L	5	3/29/2013 11:53 AM
Bromomethane	ND		25	µg/L	5	3/29/2013 11:53 AM
Carbon disulfide	ND		25	µg/L	5	3/29/2013 11:53 AM
Carbon tetrachloride	ND		25	µg/L	5	3/29/2013 11:53 AM
Chlorobenzene	ND		25	µg/L	5	3/29/2013 11:53 AM
Chloroethane	ND		25	µg/L	5	3/29/2013 11:53 AM
Chloroform	ND		25	µg/L	5	3/29/2013 11:53 AM
Chloromethane	ND		25	µg/L	5	3/29/2013 11:53 AM

Note:

ALS Environmental

Date: *29-Mar-13*

Client: Tetra Tech EM Inc.
Project: Mullins
Sample ID: Purge Water Drum
Collection Date: 3/28/2013 04:15 PM

Work Order: 1303548
Lab ID: 1303548-03
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
cis-1,2-Dichloroethene	ND		25	µg/L	5	3/29/2013 11:53 AM
cis-1,3-Dichloropropene	ND		25	µg/L	5	3/29/2013 11:53 AM
Dibromochloromethane	ND		25	µg/L	5	3/29/2013 11:53 AM
Dibromomethane	ND		25	µg/L	5	3/29/2013 11:53 AM
Dichlorodifluoromethane	ND		25	µg/L	5	3/29/2013 11:53 AM
Ethylbenzene	ND		25	µg/L	5	3/29/2013 11:53 AM
Hexachlorobutadiene	ND		25	µg/L	5	3/29/2013 11:53 AM
Isopropylbenzene	ND		25	µg/L	5	3/29/2013 11:53 AM
m,p-Xylene	ND		25	µg/L	5	3/29/2013 11:53 AM
Methyl tert-butyl ether	ND		25	µg/L	5	3/29/2013 11:53 AM
Methylene chloride	ND		25	µg/L	5	3/29/2013 11:53 AM
Naphthalene	ND		25	µg/L	5	3/29/2013 11:53 AM
n-Butylbenzene	ND		25	µg/L	5	3/29/2013 11:53 AM
n-Propylbenzene	ND		25	µg/L	5	3/29/2013 11:53 AM
o-Xylene	ND		25	µg/L	5	3/29/2013 11:53 AM
p-Isopropyltoluene	ND		25	µg/L	5	3/29/2013 11:53 AM
sec-Butylbenzene	ND		25	µg/L	5	3/29/2013 11:53 AM
Styrene	ND		25	µg/L	5	3/29/2013 11:53 AM
tert-Butylbenzene	ND		25	µg/L	5	3/29/2013 11:53 AM
Tetrachloroethene	**200**		**25**	**µg/L**	5	3/29/2013 11:53 AM
Toluene	ND		25	µg/L	5	3/29/2013 11:53 AM
trans-1,2-Dichloroethene	ND		25	µg/L	5	3/29/2013 11:53 AM
trans-1,3-Dichloropropene	ND		25	µg/L	5	3/29/2013 11:53 AM
Trichloroethene	ND		25	µg/L	5	3/29/2013 11:53 AM
Trichlorofluoromethane	ND		25	µg/L	5	3/29/2013 11:53 AM
Vinyl chloride	ND		10	µg/L	5	3/29/2013 11:53 AM
Xylenes, Total	ND		25	µg/L	5	3/29/2013 11:53 AM
Surr: 4-Bromofluorobenzene	*88.8*		*61-131*	*%REC*	5	3/29/2013 11:53 AM
Surr: Dibromofluoromethane	*101*		*87-126*	*%REC*	5	3/29/2013 11:53 AM
Surr: Toluene-d8	*101*		*84-111*	*%REC*	5	3/29/2013 11:53 AM

Note:

Batch ID: **R98038** Instrument ID: **VMS1** Method: **SW8260**

MBLK Sample ID: **MBLK-R98038** Units: **µg/L** Analysis Date: **3/29/2013 09:23 AM**

Client ID: Run ID: **VMS1_130329A** SeqNo: **586693** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1,2-Tetrachloroethane	ND	5.0								
1,1,1-Trichloroethane	ND	5.0								
1,1,2,2-Tetrachloroethane	ND	5.0								
1,1,2-Trichloroethane	ND	5.0								
1,1-Dichloroethane	ND	5.0								
1,1-Dichloroethene	ND	5.0								
1,1-Dichloropropene	ND	5.0								
1,2,3-Trichlorobenzene	ND	5.0								
1,2,3-Trichloropropane	ND	5.0								
1,2,4-Trichlorobenzene	ND	5.0								
1,2,4-Trimethylbenzene	ND	5.0								
1,2-Dibromo-3-chloropropane	ND	5.0								
1,2-Dibromoethane	ND	5.0								
1,2-Dichlorobenzene	ND	5.0								
1,2-Dichloroethane	ND	5.0								
1,2-Dichloropropane	ND	5.0								
1,3,5-Trimethylbenzene	ND	5.0								
1,3-Dichlorobenzene	ND	5.0								
1,3-Dichloropropane	ND	5.0								
1,4-Dichlorobenzene	ND	5.0								
2,2-Dichloropropane	ND	5.0								
2-Butanone	ND	5.0								
2-Chlorotoluene	ND	5.0								
2-Hexanone	ND	5.0								
4-Chlorotoluene	ND	5.0								
4-Methyl-2-pentanone	ND	5.0								
Acetone	ND	5.0								
Benzene	ND	5.0								
Bromobenzene	ND	5.0								
Bromochloromethane	ND	5.0								
Bromodichloromethane	ND	5.0								
Bromoform	ND	5.0								
Bromomethane	ND	5.0								
Carbon disulfide	ND	5.0								
Carbon tetrachloride	ND	5.0								
Chlorobenzene	ND	5.0								
Chloroethane	ND	5.0								
Chloroform	ND	5.0								
Chloromethane	ND	5.0								
cis-1,2-Dichloroethene	ND	5.0								
cis-1,3-Dichloropropene	ND	5.0								

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

QC BATCH REPORT

Batch ID: **R98038** Instrument ID: **VMS1** Method: **SW8260**

Dibromochloromethane	ND	5.0					
Dibromomethane	ND	5.0					
Dichlorodifluoromethane	ND	5.0					
Ethylbenzene	ND	5.0					
Hexachlorobutadiene	ND	5.0					
Isopropylbenzene	ND	5.0					
m,p-Xylene	ND	5.0					
Methyl tert-butyl ether	ND	5.0					
Methylene chloride	ND	5.0					
Naphthalene	ND	5.0					
n-Butylbenzene	ND	5.0					
n-Propylbenzene	ND	5.0					
o-Xylene	ND	5.0					
p-Isopropyltoluene	ND	5.0					
sec-Butylbenzene	ND	5.0					
Styrene	ND	5.0					
tert-Butylbenzene	ND	5.0					
Tetrachloroethene	ND	5.0					
Toluene	ND	5.0					
trans-1,2-Dichloroethene	ND	5.0					
trans-1,3-Dichloropropene	ND	5.0					
Trichloroethene	ND	5.0					
Trichlorofluoromethane	ND	5.0					
Vinyl chloride	ND	2.0					
Xylenes, Total	ND	5.0					
Surr: 4-Bromofluorobenzene	44.8	0	*50*	0	*89.6*	*61-131*	0
Surr: Dibromofluoromethane	49.4	0	*50*	0	*98.8*	*87-126*	0
Surr: Toluene-d8	49.97	0	*50*	0	*99.9*	*84-111*	0

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech EM Inc.
Work Order: 1303548
Project: Mullins

QC BATCH REPORT

Batch ID: **R98038** Instrument ID: **VMS1** Method: **SW8260**

LCS Sample ID: **LCS-R98038** Units: **µg/L** Analysis Date: **3/29/2013 07:53 AM**
Client ID: Run ID: **VMS1_130329A** SeqNo: **586690** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	50.26	5.0	50	0	101	48.4-140	0			
1,1-Dichloroethene	41.71	5.0	50	0	83.4	45.5-150	0			
1,2-Dichloroethane	49.32	5.0	50	0	98.6	46.5-141	0			
1,3-Dichlorobenzene	43.48	5.0	50	0	87	42.5-133	0			
1,4-Dichlorobenzene	43.26	5.0	50	0	86.5	38.9-136	0			
Benzene	42.94	5.0	50	0	85.9	50.7-134	0			
Carbon tetrachloride	51.18	5.0	50	0	102	45.5-143	0			
Chlorobenzene	43.62	5.0	50	0	87.2	45-133	0			
Chloroform	47.23	5.0	50	0	94.5	52.4-136	0			
cis-1,2-Dichloroethene	42.55	5.0	50	0	85.1	49.7-138	0			
Ethylbenzene	44.69	5.0	50	0	89.4	37.8-145	0			
m,p-Xylene	87.76	5.0	100	0	87.8	25.1-163	0			
Styrene	45.04	5.0	50	0	90.1	26.3-172	0			
Tetrachloroethene	45.76	5.0	50	0	91.5	37.3-139	0			
Toluene	45.52	5.0	50	0	91	44-135	0			
Trichloroethene	47.36	5.0	50	0	94.7	46.9-134	0			
Surr: 4-Bromofluorobenzene	47.11	0	*50*	0	*94.2*	*61-131*	0			
Surr: Dibromofluoromethane	50.49	0	*50*	0	*101*	*87-126*	0			
Surr: Toluene-d8	51.04	0	*50*	0	*102*	*84-111*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech EM Inc.
Work Order: 1303548
Project: Mullins

QC BATCH REPORT

Batch ID: **R98038** Instrument ID: **VMS1** Method: **SW8260**

MS Sample ID: **1303449-02A MS** Units: **µg/L** Analysis Date: **3/29/2013 08:23 AM**
Client ID: Run ID: **VMS1_130329A** SeqNo: **586691** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	53.51	5.0	50	0	107	47.4-141	0			
1,1-Dichloroethene	42.75	5.0	50	0	85.5	56.3-140	0			
1,2-Dichloroethane	51.04	5.0	50	0	102	50.1-139	0			
1,3-Dichlorobenzene	47.77	5.0	50	0	95.5	53-127	0			
1,4-Dichlorobenzene	46.03	5.0	50	0	92.1	53.4-129	0			
Benzene	45.58	5.0	50	0	91.2	52.8-136	0			
Carbon tetrachloride	55.36	5.0	50	0	111	48.1-141	0			
Chlorobenzene	47.33	5.0	50	0	94.7	52.4-132	0			
Chloroform	48.4	5.0	50	0	96.8	52.9-136	0			
cis-1,2-Dichloroethene	43.9	5.0	50	0	87.8	63.5-128	0			
Ethylbenzene	48.51	5.0	50	0	97	46.5-146	0			
m,p-Xylene	95.14	5.0	100	0	95.1	38.2-167	0			
Styrene	47.79	5.0	50	0	95.6	20.9-184	0			
Tetrachloroethene	51.52	5.0	50	0	103	55.2-134	0			
Toluene	48.12	5.0	50	0	96.2	45.1-138	0			
Trichloroethene	52.06	5.0	50	0	104	52.8-133	0			
Surr: 4-Bromofluorobenzene	45.19	0	*50*	0	*90.4*	*61-131*	0			
Surr: Dibromofluoromethane	51.08	0	*50*	0	*102*	*87-126*	0			
Surr: Toluene-d8	50.31	0	*50*	0	*101*	*84-111*	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech EM Inc.
Work Order: 1303548
Project: Mullins

QC BATCH REPORT

Batch ID: **R98038** Instrument ID: **VMS1** Method: **SW8260**

MSD Sample ID: **1303449-02A MSD** Units: **µg/L** Analysis Date: **3/29/2013 08:53 AM**
Client ID: Run ID: **VMS1_130329A** SeqNo: **586692** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
1,1,1-Trichloroethane	48.89	5.0	50	0	97.8	47.4-141	53.51	9.02	20	
1,1-Dichloroethene	40.13	5.0	50	0	80.3	56.3-140	42.75	6.32	20	
1,2-Dichloroethane	49.26	5.0	50	0	98.5	50.1-139	51.04	3.55	20	
1,3-Dichlorobenzene	42.45	5.0	50	0	84.9	53-127	47.77	11.8	20	
1,4-Dichlorobenzene	40.79	5.0	50	0	81.6	53.4-129	46.03	12.1	20	
Benzene	43.13	5.0	50	0	86.3	52.8-136	45.58	5.52	20	
Carbon tetrachloride	50.24	5.0	50	0	100	48.1-141	55.36	9.7	20	
Chlorobenzene	42.81	5.0	50	0	85.6	52.4-132	47.33	10	20	
Chloroform	45.95	5.0	50	0	91.9	52.9-136	48.4	5.19	20	
cis-1,2-Dichloroethene	41.69	5.0	50	0	83.4	63.5-128	43.9	5.16	20	
Ethylbenzene	43.39	5.0	50	0	86.8	46.5-146	48.51	11.1	20	
m,p-Xylene	85.19	5.0	100	0	85.2	38.2-167	95.14	11	20	
Styrene	43.75	5.0	50	0	87.5	20.9-184	47.79	8.83	20	
Tetrachloroethene	45.85	5.0	50	0	91.7	55.2-134	51.52	11.6	20	
Toluene	45.49	5.0	50	0	91	45.1-138	48.12	5.62	20	
Trichloroethene	48.21	5.0	50	0	96.4	52.8-133	52.06	7.68	20	
Surr: 4-Bromofluorobenzene	46.3	0	*50*	0	*92.6*	*61-131*	45.19	*2.43*		
Surr: Dibromofluoromethane	50.43	0	*50*	0	*101*	*87-126*	51.08	*1.28*		
Surr: Toluene-d8	50.54	0	*50*	0	*101*	*84-111*	50.31	*0.456*		

The following samples were analyzed in this batch: 1303548-01A 1303548-02A 1303548-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

ALS Environmental

Date: 29-Mar-13

Client: Tetra Tech EM Inc.
Project: Mullins
WorkOrder: **1303548**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

Acronym	Description
DUP	Method Duplicate
E	EPA Method
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitaion Limit
SDL	Sample Detection Limit
SW	SW-846 Method

Units Reported	Description
µg/L	

ALS Environmental

Sample Receipt Checklist

Client Name: **TETRATECH-CINCINNATI** Date/Time Received: **28-Mar-13 19:02**

Work Order: **1303548** Received by: **SLW**

Checklist completed by: Jan Wilcox 29-Mar-13 Reviewed by: Jan Wilcox 29-Mar-13

eSignature | Date | eSignature | Date

Matrices:

Carrier name: Client

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	5.0		
Cooler(s)/Kit(s):			
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	N/A ☐
pH adjusted?	Yes ☐	No ☐	N/A ☐
pH adjusted by:	-		

Login Notes: Sample bottles for "GW1" samples are not labeled. The bottles were received in a ziplock bag with the ID written on the bag.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction: